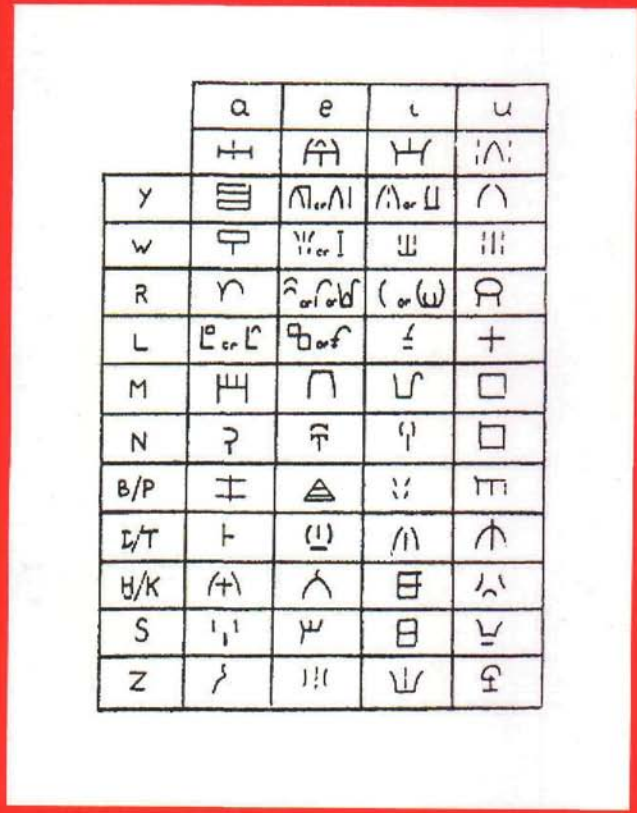
# THE MANKIND QUARTERLY

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Vol. XXXVI, No. 1 Fall 1995

# CONTENTS

**The Biocultural Evolution of the Male-Female Mortality Differential**
By Arlen D. Carey and Joseph Lopreato ..... 3

**Correlation between the Mother's Pelvis Measurements and the Measurements of New-born Infants in Bulgaria**
By Maria Buchvarova ..... 29

**Some Dysgenic Tendencies in the Netherlands**
By C. W. Rietdijk ..... 39

**Demographic Trends Impacting the Family in Slovakia: 1988-1993**
By Magdalena Piscova and Richard A. Dodder ..... 45

**Etruscans (Tursha) at Troy and on the Phaistos Disk**
By Edgar Bowden ..... 57

**The Concept of Heredity in the History of Western Culture (Part Three)**
By Roger Pearson ..... 73

**The Causal Factors of Crime: Understanding the Sub-Culture of Violence**
By Kevin Lamb ..... 105

*Cover Picture*: The Cypro-Minoan II syllabary. (See article: *Etruscans (Tursha) at Troy and on the Phaistos Disk.*)

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# The Biocultural Evolution of the Male-Female Mortality Differential

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The old nature-nurture debate has thrived in social science for quite some time (Degler, 1991). A prominent example of the debate in the demographic literature involves sex mortality differentials. For instance, Madigan (1957) concluded from his ingenious study of Roman Catholic Sisters and Brothers that sex mortality differentials were "biologically caused." Yet some years later, Retherford argued that much of the sizable differential was attributable to culturally-encouraged sex-based differences in cigarette smoking. Of late there has been a growing, overt recognition that *both* endogenous and exogenous factors are important contributors to the differential – a position in keeping with an editorial in *Science* declaring the nature-nurture debate over (Koshland, 1987). Thus, on the basis of his updated analysis of Preston's (1976) international mortality data, Gage (1994, p. 291) reports that his results "support the theory that endogenous biological factors as well as social factors cause the trends in sex differentials in mortality (see, also, many of the contributions to the Ory and Warner [1990] volume).

Research on sex mortality differentials will undoubtedly benefit from the collapse of the false nature-nurture dichotomy, as biologists provide social demographers with answers to such questions as "What are the markers of intrinsic robustness? How do the markers vary within each sex, and how do their distributions differ between the sexes?" (Verbrugge, 1990, p. 184). These are important questions. But if the famed geneticist Theodosius Dobzhansky (1973) was correct in stating that "nothing in biology makes sense except in the light of evolution," it will behoove demographers to tap into more deeply historical aspects of human biology. Such an evolutionary



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perspective may enable demographers to reap explanatory benefits analogous to those accruing to "evolutionary (or Darwinian) medicine," e.g., an advanced understanding of SIDS, virulence, senescence, and psychiatric disorders (see, e.g., McKenna, Mosko, Dungy, and McAninch, 1990; Rose, 1991; Williams and Nesse, 1991; Ewald, 1993, 1994; Nesse and Williams, 1994).

A major step toward bringing evolutionary theory to bear on our understanding of sex mortality differentials was provided by Robert Trivers (1972, 1985). Trivers (1972) relied upon sexual selection theory to produce a robust, general model of sex differential mortality that stressed differences in the distribution of reproductive effort. Among sexually dimorphic species, the two sexes typically invest reproductive efforts differently between mating and parenting. In such cases, the sex that invests more heavily in mating (usually the male) generally experiences excessive mortality as the result of heightened intra-sexual competition. Later, Trivers (1985) directly applied his theory to the now-common observation of substantial excesses of male mortality among humans, arguing that the fact was an evolutionary result of male-male competition – a fact reflecting patterns of relatively low male parental investment that characterized much of our species' past.

Trivers' work has attracted little attention among social demographers, perhaps because the explanation of current facts by appeal to dynamics of the distant past may appear farfetched. At issue, apparently, is *the tempo of change*; namely, how can such large-scale changes in the differential as those recently observed in many of the world's populations be accounted for by forces rooted so far in the past? The basic answer, not specified by Trivers, must lie in the interaction of evolved adaptations with varying environmental conditions.

We aim in this paper to extend Triver's basic model with a theory of the human sex mortality differential that encompasses the effects of male intra-sexual selection, of natural selection pressures specific to females, and of environmental, including sociocultural, factors that mitigate or enhance the effects of evolutionary dynamics. Our focus is on *the overall sex-differentiated mortality rate,* thus avoiding detailed attention to the specific pathologies that concern epidemiological studies. In what follows, we first characterize the



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range of the sex mortality differentials observed in recent populations and then turn to some basic aspects of evolutionary biology, as well as certain environmental variables, in order to provide a biocultural explanation of the differential in question.

## Mortality Differentials by Sex

### *Overall Differentials*

Today, females have a longer life expectancy in most populations, but the magnitude of the female survival advantage varies considerably between populations. Table 1 shows sex-specific life expectancies at birth and female-male differences for ten current populations. These are divided into two categories representing, respectively, the five countries with the lowest female life expectancy and the five with the highest among those included in the *Demographic Yearbook* for 1992 (UNSO, 1994). They are arranged in rank order according to this metric.

The across-category difference between minimum and maximum life expectancy at birth is more than 40 years for females (Afghanistan-Japan comparison) and more than 36 years for males (Sierra Leone-Japan comparison). As a partial function of the greater female difference, the magnitude of the sex differential in life expectancy is greater in the high longevity populations than in the low-longevity ones. For example, the female advantage in France (8.2 years) is more than eight times greater than that found in Afghanistan and Guinea (1.0 year). The smallest difference (2.4 years) is between Sweden, on the one hand, and Sierra Leone and Guinea Bissau, on the other.

Age- and sex-specific death rates generally indicate variations in the intensity of mortality differentials across the stages of individual development. The primary proximate causes of death also vary across these stages. Consequently, we shall now turn to sex mortality differentials at three crucial life stages in order to provide a more detailed depiction of the differentials. Since, most of the available data are from the economically more developed countries (MDCs), we begin with these.

### *Differentials in MDCs Fetal Differentials*

Sampling and other problems make it nearly impossible to



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**TABLE 1 Life Expectancies, at Birth, in Select Present-Day Populations, by Sex**

| Population | | | |
|---|---|---|---|
| *Lowest Populations* | | | |
| Afghanistan | 42.0 | 41.0 | 1.0 |
| Sierra Leone | 42.6 | 39.4 | 3.2 |
| Guinea | 43.0 | 42.0 | 1.0 |
| Guinea-Bissau | 43.1 | 39.9 | 3.2 |
| East Timor | 43.4 | 41.6 | 1.8 |
| *Highest Populations* | | | |
| Japan | 82.1 | 76.1 | 6.0 |
| France | 80.9 | 72.7 | 8.2 |
| Switzerland | 80.9 | 74.1 | 6.8 |
| Sweden | 80.5 | 74.9 | 5.6 |
| Iceland | 80.3 | 74.3 | 6.0 |

Source: United Nations Statistical Office (1994).



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obtain a reliable estimate of the sex ratio at conception. Most studies show, however, that males are more common than females. Hassold, Quillen, and Yamane (1983:44), for example, estimate the sex ratio at conception to be 115-120 males per 100 females. By birth time, the ratio is approximately 105, indicating a net excess of male mortality *in utero*. Other evidence supports this conclusion (e.g., Teitelbaum, 1971; Creasy, Crolla, and Alberman, 1976; Matthiessen and Matthiessen, 1977; but cf. Nathanson, 1984).

Not much is known about the proximate causes of differential fetal mortality. McKeown and Lowe (1951) note a higher incidence of certain types of malformations among male fetuses. The explanation here may lie in the unmatched (XY) configuration of the male sex chromosomes. Negative recessive traits on these chromosomes readily express themselves as contrasted to the paired (XX) female chromosomes. This area, however, is controversial (see, e.g., Trivers, 1972, 1985; Smith and Warner, 1990). Trivers (1985, pp. 307-309), for example, points out that, while in some animals, e.g., many species of birds, males are XX and females XY, males still have higher mortality rates. Others suggest a slightly retarded rate of male maturation (e.g., Torday et al., 1981) – an hypothesis well in keeping with the phenomenon of "bimaturism" widespread among mammals (e.g., Barash, 1982). The faster maturation of female fetuses may improve their viability in the presence of host stresses, e.g., maternal malnutrition. These two factors – differential malformation and bimaturism – certainly do not constitute an exhaustive list of likely proximate causes of differential fetal mortality; nor has the magnitude of their impact been determined.

*Infant and Child Differentials*

In general, male infants and children, too, have a greater mortality rate than do their female counterparts. Teitelbaum (1971), for instance, shows sex ratios of 133.0 to 160.6 for neonatal deaths in five Western European countries for the years 1931 through 1962. Relatedly, females appear to have greater neonatal viability except in cases of extremely high birth weights (greater than 4,250 grams), where male-female differences almost disappear (Shapiro, Schlesinger, and Nesbitt, 1968). According to the "Advance Report of Mortality Statistics" (USDHHS, 1994), male infant mortality has



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an excess of above 23 percent; furthermore, there is a consistently lower female death rate from age 1 through 14 (see also Shapiro, Schlesinger, and Nesbitt, 1968).

A number of proximate causes of such differentials have been identified (e.g., Waldron, 1976, 1983; Khan and Cataio, 1984, chap. 7). For instance, the incidence of major malformations is 36 percent higher among newborn males than among female newborns (Naeye et al., 1971). Slower male fetal maturation, as reflected in comparatively more underweight males, and the possible effects of the XY configuration, *inter alia*, may reduce the viability of male infants (Torday et al., 1981). More broadly, recent U. S. data (USDHHS, 1990) show that, during the first five years of life, male death rates are higher than female rates for all major causes of death. For both sexes, trauma is the largest contributor to childhood deaths (ages 1-14); but the male rate is nearly twice greater than the female rate (USDHHS, 1990).

Perhaps a cultural explanation may partially suffice for some variations, such as trauma: Girls are given less freedom of movement and thus may encounter fewer dangers. Still, a purely cultural hypothesis would not square with the fact that this differential behavior is both cross-cultural (HRAF) *and* inter-specific (e.g., Fagen, 1981). Moreover, mounting evidence from neurobiology and endocrinology suggests that various differences between the sexes reflect hormonal influences on early brain development (e.g., DeVries et al., 1984; Reinisch, Rosenblum, and Sanders, 1987; Becker, Breedlove, and Crews, 1992; Kimura, 1992; LeVay, 1993).

*Adult Differentials*

Age-specific mortality rates for males are greater than for females throughout adulthood in most of the MDCs (e.g., Preston and Weed, 1976; Lopez, 1983; Wingard, 1984), although the magnitude of the difference varies considerably across age categories. The difference appears to be greatest at ages 15-24 and 55-64. One estimate puts the average sex mortality ratio at 267 at the first peak and at 199 at the second (Lopez, 1983). Two distinct patterns of proximate causes are associated with this bimodal distribution. The first peak reflects primarily the comparatively high levels of accidental deaths, homicides, and suicides among males (Lopez, 1983). Thus,



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in 1987 United States the death rates attributable to accidents and violence were 3.8 times greater for males aged 20 to 24 than for their female counterparts (USDHHS, 1990). Moreover, whereas such deaths accounted for less than half of all female deaths in this age group, they constituted nearly two-thirds of all corresponding male deaths (e.g., Preston, Keyfitz, and Schoen, 1972).

The reported causes of death in the second peak (55-64) are generally associated with degenerative diseases (e.g., Waldron, 1976; Lopez, 1983). For example, Lopez (1983) reports that approximately half of the sex differential between the ages of 35 and 74 is attributable to cardiovascular disorders. Malignant neoplasms account for roughly 20 percent of the differential in this age group (Lopez, 1983). Again, males are more likely than females to smoke, and smoking is more lethal for them (Retherford, 1975; Preston, 1976; Waldron, 1976; Nam, Hummer, and Rogers, 1994). The magnitude of smoking's impact is the subject of debate, however. Waldron (1976) estimates that about half of the overall US differential is attributable to cigarette smoking alone, but this position does not seem to be compatible with several critical facts. For example, the female survival advantage is lowest in the least developed countries, where smoking is almost exclusively a male activity (e.g., Reichel-Dolmatoff and Reichel-Dolmatoff, 1961; Todd, 1986). Further, using the National Health Interview and the National Mortality Followback surveys, Rogers and Powell-Griner (1991) have found that "gender differences in life expectancies . . . persist even with the elimination of smoking."

Available facts are certainly rich and complex. As noted, our goal is not to review them in any detail. Rather, on the assumption, to be dealt with presently, that there are notable differences between males and females in physio-anatomy and selection processes, our principal aim is to bring certain well-known evolutionary tools to bear on such facts.

## Differentials in LDCs

### *Infant and Child Differentials*

Data on differential fetal mortality in the LDCs are unavailable. But the overall levels of infant and child mortality are higher in these countries than in the more developed ones, and the pattern of sex



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differentials is also somewhat different from that observed above. Thus Heligman (1983) reports an 18.2 percent excess of male mortality during the first year of life in LDCs. Up to that point, the MDCs and the LDCs correspond somewhat, but an important variation emerges in early childhood: On average, females in LDCs appear to experience excess mortality between the ages of 1 and 4. For this age group, Heligman (1983) reports an average female mortality excess of 10 percent in over two-thirds of the LDCs studied. But then again, for the ages 5-14, female mortality rates are generally lower than male rates.

What can we make of such findings? Relevant data on the poorer countries are limited. We suspect, however, that in many respects the basic etiology does not vary greatly between the MDCs and the LDCs. In both categories of countries, the excess male infant mortality may be due to a higher incidence of malformations and immature births. The higher male mortality in older children may be due to their higher susceptibility to trauma and violence behavior. The excess mortality among girls aged 1-4 in the LDCs in all likelihood calls attention to patterns of nutrition and health care. Specifically, boys in some poorer countries apparently receive larger portions of the available food supply, and are more likely to receive prompt health care when needed (e.g., El Badry, 1969; Bhatia, 1983; Heligman, 1983; but see Cronk, 1991). Such poorer treatment of girls likely occurs prior to age 1 as well, but its effect on sex mortality differential is probably offset by the relatively high death rate among frail male infants.

*Adult Differentials*

As was found in the MDCs, LDC females aged 45 or greater generally feature lower mortality rates than their male counterparts. However, comparisons of younger adults in many cases reverse the pattern found in the more developed countries. Indeed, the most striking characteristic of adult mortality differentials in the LDCs is the frequent excess of female mortality observable between ages 15 and 44, the period of reproduction. For example, among the LDCs with high overall mortality (life expectancy at birth below sixty years), 47 percent show excess female mortality at ages 15-24, and 35 percent feature excess female mortality in the 25-44 age bracket (Heligman,



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1983). The average magnitudes of the female mortality excess are roughly 25 percent for the younger age group and 14 percent for the older. Recall that in the MDCs the mortality sex ratio reached its apex in the 15-24 age group. In many LDCs this same age group now features the lowest value. For instance, in 1970-1972 India, the mortality sex ratios were approximately 110 for age 0 through 1, 120 for ages 45-64, and only 60 for ages 15-24 (Heligman, 1983).

Some scholars have argued that the primary proximate causes of the excess female mortality in the LDCs during young adulthood are "maternal-related" (Chen et al., 1974; Bhatia, 1983; Heligman, 1983:22). The reference is to death within 90 days of parturition (Chen et al., 1974). Death within this period is generally designated as "maternal mortality." For example, Chen et al. (1974) found in a Bangladesh study that maternal mortality accounted for 27 percent of all adult female deaths; 90 percent of the maternal deaths were directly related to childbearing, including such causes as eclampsia, labor complications, infection, and postpartum tetanus. The high LDC maternal mortality rates often result from limited antisepsis and poor hygienic hospital practices, cultural practices promoting malnutrition during pregnancy and lactation, unsanitary conditions during parturition, and overall poor health care (Bhatia, 1983; Heligman, 1983). Furthermore, a sizable portion of young adult female deaths from such other clinical causes as infectious diseases, especially tuberculosis, appears to be maternal-related (see e.g., Turner, 1950; Lurie, 1964; Stead and Dutt, 1983; Jacobson, 1991). For instance, Jacobson (1991:14) reviews a number of studies indicating that 54, 38, 25, 37, and 46 percent of female deaths occurring in the reproductive ages were maternal-related in the following areas: Paraguay, a region of Egypt, the Philippines, Peru, and a district of Bangladesh, respectively. Chen et al. (1974) estimate that the female mortality rates would be equal to, or lower than, male rates throughout most of the reproductive years if maternal mortality were eliminated.

Such stress on maternal mortality has often been charged as being unwarranted (e.g., Stolnitz, 1957; Preston, 1976). Preston's (1976) classic study of late-nineteenth and early- and mid-twentieth century predominantly European populations suggests that the impact of maternal mortality on the overall sex mortality differential in high



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mortality populations (and in the historical past) may often be overshadowed by such factors as cardiovascular disease, neoplasms, and respiratory dysfunctions. However, many of Preston's populations had already experienced improvements in nutrition and living standards but had not yet experienced comparable improvements in health care. The result may have been a partial reduction of maternal mortality rates and little or no change in the rate of deaths from degenerative causes (for further discussion, see Heligman, 1983). Furthermore, Gage's (1994) reanalysis of Preston's data indicates that maternal mortality was a major contributor to the smaller differential of times past. At any rate, the most detailed and most global data now available leave no doubt about the saliency of maternal mortality in the LDCs. In Africa and southern Asia, for example, maternal mortality rates are over 30 times those in the MDCs (United Nations, 1991:58).

Before proceeding to our discussion, it may now be helpful to summarize the above findings:

1. In the more developed countries, females on the average live longer than males, although, to be sure, the size of the differential varies.

2. Further, with very few exceptions, females in the more developed countries experience lower mortality rates than males throughout the life cycle. Significantly, this advantage is highest in the 15-24 age bracket, when, on the one hand, a considerable portion of female reproduction takes place, and, on the other, male competition, violence, and trauma, are at or near peak level. Equally important is the fact that, on the whole, the female mortality rate is lower than the male rate *in utero* as well.

3. The less developed countries reveal a more complex picture, which may be represented as follows:

   a. During the first year of life, baby girls appear to have a survival advantage over baby boys, very probably because a larger percentage of them are born healthy.

   b. Then, from age 1 to 4 years, girls often yield their advantage to boys, probably because many of the sickly boys have died and the survivors receive better attention than do their sisters.



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c. The pattern is again reversed in the 5-14 age bracket, when male trauma activities accelerate.

d. In many, not all, countries the pattern is reversed still again from age 15 to 44, when women are at risk for various types of morbidity associated with childbirth.

e. Once through the reproductive ages, females regain the advantage that, judging by their greater endurance *in utero* and in the first year of life, they may have been conceived and born with.

## Discussion

We wish to entertain the hypothesis that women live longer than men in today's world because they are a less frail evolutionary product *and* because modern environmental conditions facilitate the expression of this biological fact. Our method is thus biocultural. We begin with considerations of natural selection and then try to understand how environmental factors have interacted with it in the course of time. Before proceeding, however, let us underscore two findings from the above presentation that are especially suggestive of our method. One, in societies where modern technology and information have reduced the stresses associated with menstruation, pregnancy, parturition, and lactation, women have a survival advantage of considerable though varying magnitude *even during the years when such stresses are at their maximum*; conversely, in the technologically less developed societies, women often have a survival disadvantage precisely during such years. Two, with few if any exceptions, *females exhibit greater viability than males at the fetal and neonatal stages.*

## Evolutionary Forces

In most of the literature on mortality differences between the sexes, causality, when specified, is typically attributed to such proximate factors as differences in life-style between the sexes and/or to clinically specifiable pathological conditions. The hominid line goes back several million years, and it would be rash not to take this fact into account also in a matter concerning the fundamental difference in our species, namely, sexual dimorphism.



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*Dimorphism, Bipedalism, and Mortality*

It bears noting that the female longevity advantage is not an exclusively human phenomenon (e.g., Hamilton, 1948; Schultz, 1969; Glücksmann, 1981). Among other primates, for instance, a female advantage has been shown in nearly every species studied (e.g., Schultz, 1969). Accordingly, in reviewing the above facts pertaining to the LDCs, one question is compelling: Why might human females experience higher mortality rates during the primary reproductive ages than their male companions? Evolutionary history suggests a plausible answer and implicates precisely the physio-anatomy of female reproduction, specifically the effect of bipedalism on the pelvic region. In a nutshell, the physics of bipedalism entailed a reduction of the pelvic inlet, and, until recent times, this change constituted a major survival handicap for the child-bearing sex (e.g., Trevathan, 1987; Nesse and Williams, 1994).

The fact transpires dramatically from inter-primate comparisons, when body size and the size of fully mature fetuses are controlled for. The difference is most pronounced when we compare humans to our nearest primate relatives: chimpanzees, gorillas, and orangutans (Schultz, 1969, p. 34). The sum of the head width and head length of the newborn chimpanzee (with whom we shared a common ancestor as recently as four-five million years B. P. [Wilson and Cann, 1992]), for example, is approximately one-half the combined breadth and height of the chimpanzee pelvic inlet. By contrast, the corresponding dimensions of the head in the newborn human exceed, on the average, the dimensions of the mother's pelvic inlet, thereby necessitating particularly stressful anatomical adjustments in both mother and child. What is remarkable is that our female forebears were reducing their anatomical capacity for the expulsion of the fetus even as natural selection was beginning to favor an increase in the cranial capacity of their babies (Lumsden, 1983). Until very recent times at least, these two "adaptations" were in direct conflict with each other, and the result was a female organism plagued by severe "obstetrical problems and [high] mortality related to birth" (Trevathan, 1987, pp. 21-22).

Of course, under such circumstances, natural selection favored females on the higher side of the inlet median. Still, the expanding cranial capacity produced a major female liability. Until very recent



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times, no human culture provided adequate means wherewith to compensate for the heightened dangers of childbirth. The relatively higher mortality rate among women of childbearing age in the less developed societies represents, ultimately, an evolutionary fact. These societies have not yet adequately eliminated the ancient and special risk faced by the bearers of the generations.

Stresses including fetal malformations, *in utero* infections, hemorrhage, frequent malnutrition, obstructed labor and other complications during birthing, and post-partum infections have been grave handicaps of human females' survival. But these same stresses have had major natural selection consequences. Specifically, natural selection has tended to discriminate against the more frail female organisms and to preserve the healthier ones – to favor, on average, female traits that enhance viability and endurance. The current data on longevity would suggest that modern culture has promoted, and built on, this endowment.

**Sexual selection and mortality**

But why a more frail male organism? Showing the strengths of the one is not *ipso facto* tantamount to showing the weaknesses of the other. Is there, then, a male Achilles' heel, and if so, has natural selection acted differently on it? The answer, we think, is yes to both queries. Whatever other differences may exist between males and females – e.g., variations in cardiovascular defects and smoking habits – it is an irrefutable fact that death by trauma (accidents, death in battle, homicide, etc.) is much more frequent among males than among females (e.g., Waldron, 1976; Borgia, 1980; Trivers, 1985, chap. 12; Daly and Wilson, 1988, 1990; USDHHS, 1994). Exclusively cultural explanations of the fact are not convincing. Evolutionary theory provides a useful *complement*. Charles Darwin (1859, 1871) distinguished between two major types of selection: natural selection and sexual selection. The former, and more general, refers to the "preservation of favorable variations and the rejection of injurious variations." The alluded survival differential between the healthier parturients and the weaker ones is an illustration of natural selection. The latter, sexual selection, refers to the selection that takes place as a result of competition for mates between members of the same sex. By all accounts, male sexual selection has been intense in a variety of



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species, including our own (e.g., Borgia, 1980; Ryan, 1985; Trivers, 1985; Kirkpatrick, 1987). Furthermore, the sex with the higher reproductive potential (male) competes more intensely for mates than the sex with the lower potential (female) (Trivers, 1972, 1985; see also Clutten-Brock and Vincent, 1991).

Sexual selection either is a corollary (Lopreato, 1992) of, or is typically associated with, a crucial difference existing between males and females throughout the creation: *anisogamy*, namely, the condition of inequality between the two sex cells in terms of "size and structure" (Steen, 1971), which in turn entails a difference in the number of such cells that the two sexes produce. For example, a typical young man may produce over a billion sex cells in a single day, whereas women yield at most some 400 ova throughout the course of their reproductive life. Upon this difference grafted different reproductive or "investment" strategies (e.g., Campbell, 1972; Trivers, 1972; Betzig, Borgerhoff Mulder, and Turke, 1988; Rasa, Vogel, and Voland, 1989; Clutton-Brock and Vincent, 1991; Nesse and Williams, 1994), one outcome of which is a survival disadvantage for the male that in large part reflects a high rate of intra-male competition and aggression.

Consider as an analogy two persons, each of whom has been given a million dollars to invest. One may invest in amounts as small as $1 or less, while the other is limited to investments of at least $100,000. Assuming that both attempt to maximize the return on their money, we would expect their respective investment portfolios to differ markedly. The latter's strategy would be much more "conservative," aimed at a safe return. The former would be more likely to make risky investments, e.g., to invest in quick growth stocks and play the market.

There are numerous examples of the respective behavioral strategies of males and females operating in a manner similar to the above analogy. The males of most sexually reproducing animal species invest a large amount of reproductive effort in seeking mates; in the process they often engage in risky behavior with other males that may enhance reproductive success but at the same time undermine survival chances. Zoologist M. Ryan (1985) details this outcome in the case of the túngara frog. The normal mating call of male túngaras is a sort of whining sound. Some males, however, add



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one or more "chucks" to the normal call, and females show a strong preference for such excess. Thus, in principle, and often in fact, female preference, enhances the reproductive success of the oddly behaving males. But often there is also a disadvantage to such behavior: it facilitates the search of a major predator, namely, a frog-eating bat.

The study of sexual selection among human beings is fairly young. Still, some sex-specific risks confronted by males in the evolution of our species are fairly obvious. A case in point concerns national homicide rates. The overall rate is many times greater for males than for females (Wolfgang, 1958; Daly and Wilson, 1988, 1990; Falk, 1990). Daly and Wilson (1988, 1990) show that men both commit, and are victims of, homicide at much greater rates than females at all ages. Moreover, the inter-sex differences are most pronounced during early adulthood. Again, prominent among the reported motives of homicides are sexual jealousy and rivalry as well as dominance quarrels over resources that in fact or in principle enhance reproductive success, that is, concern male sexual selection (e.g., Daly and Wilson, 1988, 1990; Falk, 1990; van der Dennen, 1992:196-199).

The proximate causes of death by trauma are many. But *in the last analysis*, most if not all can be subsumed under factors that probably evolved under the pressure of sexual selection syndromes, such as the endocrinology of aggression (e.g., Brown and Davis, 1975; Dabbs et al., 1987; Moyer, 1987; Ellis, 1989; Becker et al., 1992; van der Dennen, 1992). The immoderate production of male sex cells has produced an organism inclined toward a risky, often reckless, approach to the environment (e.g., Borgia, 1980; Barash, 1982, chap. 10; Trivers, 1985, chap. 9; Ellis, 1989; Ellis and Coontz, 1990; Clutton-Brock and Vincent, 1991). Hence, the longevity success that seems to have evolved among women is accompanied by a male survival disadvantage that may be rooted in the evolutionary implications of sexual selection.

As social scientists, we are not unaware of the vast literature positing that human males and females follow different approaches to the environment because they were socialized as boys and girls toward such strategies (e.g., Lipman-Blumen, 1984; Bandura, 1977; Lewis, 1987). It is hard, for example, to imagine a murderer who was



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socialized to be a monk, or a meek wife who had been taught that she should be nobody's domestic servant. Anisogamy and sexual selection, however, suggest that sex-specific socialization cannot be entirely capricious or epiphenomenal, and, as noted, there is increasing evidence that at least in part "sex differences are in the brain" (e.g., DeVries et al., 1984; Kimura, 1992; LeVay, 1993). Thus, the high rate of trauma deaths among young adult males may owe something, for example, to their parents' earlier encouragement of risky behaviors. But there is also something for a remainder that concerns "human nature" (see Udry, 1994).

**Intermediate or Proximate Causes**

Neither ultimate nor environmental (e.g., cultural) factors can wholly account for the observed sex differences in mortality. Just above, we have emphasized ultimate factors and others closely related to them; we now return in a more focused fashion to some of the more salient environmental factors. Consideration of the latter may be particularly pertinent to explaining mortality differentials in historical populations and in present-day populations featuring excess female mortality (e.g., India and Iran). If our appeal to natural selection levels of explanation is valid, it is also necessary to conceptualize factors that intervene to reduce the hypothesized innate survival advantage of females in some populations.

There appears to be a number of factors that inflate female mortality in some societies. Their economic and sociocultural milieux brook infectious diseases and poor sanitation, hygiene, and health care, among other consequences (e.g., Angel, 1975; McKeown, 1976; Lenski, Lenski, and Nolan, 1991). The physio-anatomic stresses of maternity noted above are thus accentuated by heightened risk of infection, unmitigated complications of labor, and the like. For example, although estrogen lowers susceptibility to tuberculosis, in societies where this disease is widespread, the female death rate from it often exceeds the male one in young adulthood because gonadotropins produced in conjunction with pregnancy and parturition mitigate estrogen's protective effects (e.g., Turner, 1950).

The bias in favor of boys also contributes to the excess female mortality of early childhood in at least some less developed countries (e.g., Waldron, 1987)[1] Typically, the preferential treatment of males



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begins at birth. In northern India, for example, the birth of a boy is likely to be greeted with celebration and religious ceremony, whereas the birth of a girl is often met with "quasi-gloom or an attitude of resignation" (Bhatia, 1983, p. 168). Preference for males often leads to malnutrition and medical neglect among girls, particularly when nutritional and medical resources are scarce (D'Souza and Chen, 1980; Bhatia, 1983).

Preferential treatment of offspring appears to undermine female survival in adulthood as well. In the LDCs, the effects of early malnutrition show up later in the female susceptibility to infectious diseases, anemia, and other debilitating disorders (Bhatia, 1983). The overall poorer level of health care available to females exaggerates the stresses of pregnancy, parturition, and lactation. Bhatia (1983) cites examples of cultural practices that restrict the caloric and protein intake of pregnant women to a level lower than the female average. At times, such practices also designate the coldest, dampest, darkest room as the appropriate location for parturition. Although the dietary restrictions may decrease the size of the fetus at delivery and thereby reduce the stress of childbirth, the net balance of all such practices may be an increase in the chance of maternal mortality.

The primary proximate factors that may have contributed to the current female longevity advantage may be grouped into two major categories. One regards the improvements in the quality and availability of nutrition, sanitation, hygiene, and health care. These are responsible for the increased life expectancy of both males and females in most if not all present-day populations. Notably, females appear to benefit more than males from the factors behind the reduction of physio-anatomical stresses associated with menstruation, pregnancy, parturition, and lactation. The male Achilles' heel has had no comparable cultural palliative. Indeed, modern culture abounds with items, such as firearms and automobiles, that may aggravate the effects of the male's aggressive and competitive behavior. For instance, Daly and Wilson (1988, Fig. 12.2) report that the U.S. homicide rate increased from about 15 per 100,000 in 1900 to nearly 80 in 1985. The other set of factors favoring female long life refers to the improvement in the status of women in society (e.g., Caldwell, 1976; Stillion, 1985; Nathanson, 1990). If, as noted above, the preferential treatment of males is a contributor to excess female



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mortality, improvements in female social status may be expected to yield improvements in female life expectancy as well.

In conclusion, our intention has not been to underestimate proximate factors, including cultural ones. We have tried to be sensitive to the interplay between them and more distal ones. Theory and facts suggest that the excessive mortality of females in some of today's less developed societies is due to a conjunction of physiological-anatomical factors (e.g., difficulty in the expulsion of the fetus) and environmental factors that raise the probability of death at childbirth. The *potential* of the physio-anatomic input does not vary in the more developed societies, where females enjoy a considerable longevity advantage. But such societies have largely eliminated the uniquely female risks associated with pregnancy and parturition, thus giving fuller play to the effect of natural selection and its construction of a relatively sturdy organism. By contrast, modern culture has maintained, if not exacerbated, the evolutionary male liability: relatively intense intra-sexual selection and the tendency toward the risky activities inherent to it. Moreover, we can think of no selective mechanism in the evolution of males that has produced an effect analogous to the conjunction in the female of a reduced pelvic inlet and an increased cranial capacity of the fetus. As a result, we may think of the male as both an evolutionarily less sturdy organism and as an organism that is especially susceptible to trauma incidents, particularly during the young-adult years.

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# Correlation between the Mother's Pelvis Measurements and the Measurements of New-born Infants in Bulgaria

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As early as 1886, W. Turner stated that "It would be good both for the pregnant woman and the obstetrician if each woman about to give birth to her child had a pelvis whose shape and measurements are of values that do not cause any mechanical injury to the young mother." The character of this statement is closely related to the fact that the pelvic measurements are influenced both by the individual differences and the racial characteristics of the population. The Balkan Peninsula and Bulgaria, in particular, represent a more or less metis zone - a mixture between Europoid and Mongoloid population. The Mongoloid admixtures have been supplied by Nuns, Avars, Koumanians, Pechenegs, Turks and Proto-Bulgarians. They have all participated in the ethnogenesis of almost all Balkan peoples and, thus, not each ethnos, but each region possesses its characteristic features. It is this particular fact that determines both the theoretical as well as the practical significance of the investigations carried out.

Modern investigations on the anatomy, the measurements and the shape of the pelvis have all been limited and restricted. As far as the available literature is concerned, the works of Olivie (1960; Drača, Garvilovič (1964, 1966); Diekl, Holmlerg (1968) Drača (1972); Kisseleva (1975); Lacerda (1982); Steward (1984) deserve our special attention. Taking into consideration the results presented and the topical problems offered in investigating the female pelvis, we have directed our attention in the following three directions, namely:

1. Investigation of the shape and measurements of the pelvis in a definite period of ontogenesis;
2. Study of the dependence between the pelvis measurements and the body length of the women examined;
3. Investigation of the correlaticln between conugata externa



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and the head circunference of the new-born in normal childbirth.

## Materials and Methods

683 women aged from 17 to 40 were subjected to our investigation. Along with body length, the programme also included the four external pelvis measurements, namely, distantia cristarum, distantia spinarum, distantia trochanterum, and conugata externa. The circumference of the heads of the babies born by these same women was included as an additional metrical indication. The Vallois index was chosen for integral evaluation of the pelvis size.

## Results

The distribution of the cases studied into age groups, whose intervals were determined according to literature data, as well as into the main height categories is shown in Tables 1 and 2.

Of all external pelvis measurements, distantia cristarum was most often used for its characteristic and, thus, it is the most often quoted indidation in literature. In our investigation it emerges as the parameter most closely related to height in proportional relation (Table 3). The minimum and the maximum values of this character in the separate height groups are rather narrow (Table 4), while the mean values of each subsequent variation series rise reliably. The tall women have the lowest absolute and relative changeability of distantia cristarum, while with the women of medium height its proportion in relation to height is largest. The most frequent individual value of the character is 28.0 sm. and as been established in 61.34% of the cases.

The proportional relation of distantia spinarum to height is less markedly expressed, while the actual increase of its absolute mean values in the individual height groups is insignificant, compared with that of distantia cristarum. 67.20% of the women have individwal value of this character -25.0 sm. The minimum size, however, is 3.0 cm smaller than the lowest value indicated in the textbooks and manuals in obstetrics (Il. Sntarkalev, L. Lambrev, 1978), used in Bulgaria.

Distantia trochanterum has been most often used in creating



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Table 1

DISTRIBUTION INTO AGE GROUPS

| Age Groups | Number of women investigated | Percentage |
|---|---|---|
| to 21 years old | 91 | 13.32 |
| 21 - 25 years old | 339 | 49.63 |
| 26 - 30 years old | 183 | 26.79 |
| 31 - 35 years old | 44 | 6.44 |
| Over 35 years old | 24 | 3.82 |
| TOTAL | 683 | 100.00 |

Table 2

DISTRIBUTION INTO HEIGHT CATEGORIES

| PARAMETERS | CATEGORIES | | |
|---|---|---|---|
| | Short | Of medium height | Tall |
| Number | 123 | 468 | 92 |
| Min-Max | 144.0-154.0 | 155.0-163.0 | 164.0-178.0 |
| x | 150.88 | 158.52 | 167.11 |
| s | 2.14 | 2.18 | 2.40 |
| m | 0.19 | 0.10 | 0.25 |
| Vs | 1.14 | 1.37 | 1.40 |
| Absolute difference | 7.64 | 8.59 | |
| t | 48.91 | 34.37 | |



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Table 3

VARIARTION-STATISTICAL CHARACTERISTIC OF THE INDICATION EXAMINED AND VALLOIS INDEX

| Characters | Min-Max | $\hat{x}$ | s | m | Vs | % of height |
|---|---|---|---|---|---|---|
| 1. HEIGHT | 144.0-178.0 | 158.90 | 4.10 | 0.10 | 2.58 | - |
| 2. D. CRISTARUM | 24.0-34.0 | 27.70 | 0.90 | 0.03 | 3.24 | 17.43 |
| 3. D. SPINARUM | 21.0-29.0 | 24.80 | 0.80 | 0.03 | 3.20 | 15.61 |
| 4. D. TROCHANT. | 23.0-34.0 | 30.10 | 1.10 | 0.04 | 3.70 | 18.94 |
| 5. C. EXTERNA | 17.0-23.0 | 19.80 | 1.60 | 0.06 | 8.10 | 12.46 |
| 6. VALLOIS INDEX | 15.0-20.0 | 17.39 | 0.69 | 0.02 | 4.02 | - |



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Table 4

DISTRIBUTION INTO HEIGHT CATEGORIES

| Character | Parameter | Short | Of medium height | Tall |
|---|---|---|---|---|
| HEIGHT | Min-Max | 144-154 | 155-163 | 164-178 |
| | x | 150.88 | 158.52 | 167.11 |
| | s | 2.14 | 2.18 | 2.40 |
| | m | 0.19 | 0.10 | 0.25 |
| | Vs | 1.41 | 1.37 | 1.40 |
| | % of height | - | - | - |
| | tst | 48.91 | 34.36 | |
| | Absolute difference | 7.64 | 8.59 | |
| D. CRISTARUM | Min-Max | 25-30 | 28-34 | 25-29 |
| | x | 27.10 | 30.43 | 27.84 |
| | s | 1.12 | 0.87 | 0.56 |
| | m | 0.10 | 0.09 | 0.05 |
| | Vs | 4.13 | 2.85 | 2.01 |
| | % of height | 17.96 | 19.19 | 16.65 |
| | tst | 60.86 | 44.65 | |
| | Absolute difference | 6.33 | 2.59 | |
| D. SPINARUM | Min-Max | 21-27 | 21-29 | 22-27 |
| | x | 24.35 | 24.83 | 25.00 |
| | s | 1.87 | 0.84 | 0.64 |
| | m | 0.16 | 0.03 | 0.06 |
| | Vs | 7.67 | 3.38 | 2.56 |
| | % of height | 16.13 | 15.66 | 14.96 |
| | tst | 2.91 | 3.16 | |
| | Absolute difference | 0.48 | 0.19 | |
| D. TROCHANTERUM | Min-Max | 26-34 | 23-34 | 28-34 |
| | x | 29.64 | 29.80 | 30.43 |
| | s | 1.22 | 1.25 | 0.87 |
| | m | 0.11 | 0.05 | 0.09 |
| | Vs | 3.37 | 4.10 | 2.85 |
| | % of height | 19.6 | 18.7 | 18.2 |
| | tst | 1.33 | 6.30 | |
| | Absolute difference | 0.16 | 0.63 | |
| D. EXTERNA | Min-Max | 17-22 | 17.5-23 | 17-21 |
| | x | 19.22 | 19.80 | 19.99 |
| | s | 1.02 | 0.70 | 0.44 |
| | m | 0.09 | 0.03 | 0.04 |
| | Vs | 5.83 | 3.53 | 2.20 |
| | % of height | 12.73 | 12.49 | 11.49 |
| | tst | 6.40 | 3.80 | |
| | Absolute difference | 0.58 | 0.19 | |
| VALLOES INDEX | Min-Max | 16-19.5 | 15-19.0 | 15-17.5 |
| | x | 17.80 | 17.38 | 16.67 |
| | s | 0.87 | 0.02 | 0.05 |
| | m | 0.07 | 0.02 | 0.05 |
| | Vs | 4.88 | 3.17 | 3.11 |
| | % of height | - | - | - |
| | tst | 0.60 | 14.27 | |
| | Absolute difference | 0.42 | 0.71 | |

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Table 5

PERCENTAGE DISTRIBUTION OF WOMEN EXAMINED IN THE CATEGORIES OF THE VALLOIS INDEX

| CATEGORIES | Short | | Medium-height | | Tall | | Total | |
|---|---|---|---|---|---|---|---|---|
| | number | % | number | % | number | % | number | % |
| narrow pelvis | - | - | 11 | 2.35 | 7 | 7.61 | 18 | 2.64 |
| medium pelvis | 57 | 45.90 | 415 | 88.67 | 85 | 92.39 | 557 | 81.55 |
| wide pelvis | 66 | 54.10 | 42 | 8.97 | - | - | 108 | 15.81 |

Table 6

PERCENTAGE DISTRIBUTION OF WOMEN EXAMINED IN THE CATEGORIES OF THE VALLOIS INDEX

| Pelvis size | Bounds | Head circumference | | | | | |
|---|---|---|---|---|---|---|---|
| | | Short | | Medium | | Large | |
| | | number | % | number | % | number | % |
| narrow | min-18.0 | 29 | 51.78 | 24 | 42.68 | 3 | 5.36 |
| medium | 18.0-21.4 | 237 | 38.16 | 293 | 47.18 | 91 | 14.66 |
| wide | 21.4-max | 3 | 50.00 | 3 | 50.00 | - | - |

Table 7

PERCENTAGE DISTRIBUTION OF WOMEN EXAMINED IN THE CATEGORIES OF THE VALLOIS INDEX

| Characters | Old data | | New data | | t |
|---|---|---|---|---|---|
| | $\bar{x}$ | m | $\bar{x}$ | m | |
| 1. HEIGHT | 157.50 | 0.29 | 158.90 | 0.10 | 7.0 |
| 2. D. CRISTARUM | 27.93 | 0.04 | 27.70 | 0.03 | 4.6 |
| 3. D. SPINARUM | 24.83 | 0.04 | 24.80 | 0.03 | 0.7 |
| 4. D. TROCHANTERUM | 30.14 | 0.04 | 30.10 | 0.04 | 0.8 |
| 5. C. EXTERNA | 19.60 | 0.03 | 19.80 | 0.06 | 3.4 |
| 6. VALLOIS INDEX | 17.60 | 0.03 | 17.39 | 0.03 | 7.0 |

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anthropological standards. A reliable difference was established only between the medium height and the short women in the present investigation. The largest percentage of women examined have individual size value of 30.0 sm. It is by 2.0 cm lower than the data used in obstetrics practice.

Conugata externa has a definite practical value among the pelvis measurements under survey. The arithmetic mean of 19.80 cm established is within the normal pelvis measurements (19-21 sm) used in practical obstetrics in Bulgaria. The differences between the height groups are insignificant. Nevertheless, they are reliable. The measurement variation decreases with the tall women. The most frequent individual value is 2O.Q cm which is characteristic of 67.20% of the women examined.

The Vallois index which is widely used in anthropological investigations illustrates not only the pelvis measurements but their relation to the height of the women examined as well. The mean value of the index for the whole contingent determines the examined women's pelves as average too. In the individual height groups the average indices decrease from the short women to the tall ones. There are no cases observed of short women with narrow pelves (See Table 5).

It is well known that in obstetrics practice the pelvis whose shape and measurements are most widely spread is assumed to be the normal one. From an anatomical point of view, a narrow pelvis is the one whose measurements are by one or more centimeter smaller than the lower bound of the norm. In Bulgaria it is assumed that an anatomically narrow pelvis is one whose canugata externa is 18.0 sm. or less, while distantia spinarum is below 23.0 sm., distantia trochanterum is below 29.0 sm. and distantia cristarum is below 26.0 sm. The values quoted coincide with or are close to the deviation x - 1 S from our data, while in the case of distantia spinarum, only, it is larger by 1.O sm.

In the context of the above said, conugata externa has been accepted as the most frequently observed and most applicable criterion of an anatomically narrow pelvis. According to literature data, anatomically narrow pelves with conugata externa below 18.0 cm vary between 10 - 15%. In the contingent studied we have 14 cases with such measurements, corresponding to 2.05% of the total number



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of women examined, while the percentage for Bulgarian women accepted in obstetrics practice is 4.68%.

The functional relationship between the pelvis measurements and the size of the foetus head has been traced as a percentage distribution the new-born babies with small, medium and large head circumferences in the mother-groups with narrow, wide and medium (in terms of conugata externa) pelves. The distribution is shown in Table 6.

It has been established from the above data that the women with narrow pelves give birth to the highest percentage of children with small head circumference, or, in other words, the highest percentage of children born by mothers with narrow conugata externa pelves have small head circumference.

In order to evaluate whether the pelvis measurements are susceptible to changes, i.e. whether they are subjected to processes of acceleration affecting the overall body measurements, we have carried out a retrospective survey of women from the same region, whose data were recorded more than 10 years before. The results are presented in Table 7.

A reliable increase in height of 1.40 sm. has been reported for the period. Acceleration has not affected the pelvis measurements, excluding conugata externa. The pelvis width, expressed through distantia cristarum with contemporary women is smaller, while distantia spinarum and trochanterum have not changed at all. The features pointed out have influenced the Vallois index. An interesting fact has been observed here, namely the increase of conugata externa. In this sense the existence of a certain relationship between the pelvis opening and the acceleration in foetus measurements, observed by many authors, could be assumed. Moreover, the features pointed out presuppose a more general tendency of pelvis narrowing while its opening is widening. The substantiation and confirmation of the above conclusion, however, necessitates a far more extensive investigation than that which we present here.



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# Some Dysgenic Tendencies in the Netherlands

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The possibility that the intelligence of western populations may be deteriorating as a result of the high fertility of the less intelligent, the poorly educated and the lowest socio-economic classes was first raised by the British social scientist Francis Galton (1869). Since that time a number of studies have shown that this so-called "dysgenic fertility" is present in the United States (Retherford and Sewell, 1988) and Europe (Nohura-Atoh, 1980). Recent evidence for the existence of dysgenic fertility for intelligence and education has been reported for the United States by Herrnstein and Murray (1994). In this paper I report some recent data showing dysgenic fertility in The Netherlands.

Income is an adequate indirect measure of intelligence because it is correlated with intelligence at a magnitude of about .35 (Jencks, 1972). Fertility in relation to income has been reported for The Netherlands in a study carried out in 1980 on a representative sample of the population (Inkomen en Rondkomen, 1981). The results are shown for five income categories (I = low to V = high) in Table 1. This gives the percentage of the adult population and the percentages of children in five income categories. Notice that the highest income, Group V, has the lowest proportion of children relative to its percentage in the population, while the lowest income category I has more children than its percentage in the population, indicating overall dysgenic fertility for income.

We look now at the fertility of men in relation to their level of education obtained from The Netherlands Fertility and Family Survey (1993). The study of 1432 men divided the sample into three education levels of basic, completed secondary and tertiary. Mean numbers of children already born and expected were obtained in the survey for those born in 1950-54 and 1955-59. The youngest in this sample, born in 1959, were approximately 31 at the time of the survey, so fertility for these was not complete. Notice that for children



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Table 1: Percentage of population and of children in 5 income categories

| | INCOME | | | | |
|---|---|---|---|---|---|
| | LOW | | MODERATE | | HIGH |
| | I | II | III | IV | V |
| Percentage of population | 8.4 | 22.4 | 21.8 | 25.4 | 22.0 |
| Percentage of children | 10.1 | 21.6 | 27.9 | 25.5 | 14.8 |



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Table 2: Numbers of children born and numbers of children expected for Dutch men

| Level of education | Number of children | | Number of children expected | |
|---|---|---|---|---|
| Date of birth | 1950-54 | 1955-59 | 1950-54 | 1955-59 |
| Low | 1.70 | 1.40 | 1.86 | 1.86 |
| Medium | 1.89 | 1.41 | 2.01 | 1.97 |
| High | 1.60 | 1.29 | 1.80 | 2.06 |



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Table 3: Numbers of children expected and expected childlessness in Dutch women

| Educational level | Number of children expected | Expected childless (percentages) |
|---|---|---|
| Low | 2.09 | 10 |
| Medium | 1.99 | 11 |
| High | 1.71 | 24 |



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already born and for total anticipated numbers of children the relationship between educational level and fertility is generally in the form of an inverted U, with highest fertility in the middle educational level and lower fertility among the high and low educational levels. There is a striking change in anticipated fertility from the 1950-54 cohort to the 1955-59 for expected fertility. The 1950-54 cohort's expected fertility is slightly dysgenic, whereas the 1955-59 cohort's expected fertility has become eugenic, with highest expected fertility among the most educated. It should however be noted that expected numbers of children are not invariably realized and the less intelligent and less educated tend to have more children than planned.

Women's expectations of numbers of children in relation to their educational level have been reported by De Graaf (1995) in a study of a sample of 1751 females born in the decade 1950-59. The results are shown for those with basic, completed secondary and tertiary education in Table 3. The table also shows the percentages who were childless up to the date of the survey in the early 1990s, when the sample were aged 32+, and who expect to remain childless. Notice that there are pronounced dysgenic trends for numbers of children expected and percentages expecting to remain childless. The results suggest that dysgenic fertility among women is greater in The Netherlands than among men. This is consistent with the American results on dysgenic fertility for intelligence reported by Retherford and Sewell (1988)

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# Demographic Trends Impacting the Family During the Economic and Political Transitions in Slovakia: 1988-1993

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Prior to 1989 family care, employment, and most other facets of social welfare were guaranteed by the state. The ongoing dynamic transformations since then have impacted the status of families. Demographic data and personal experiences are utilized in this paper to examine trends relating to family welfare in Slovakia between 1988-1993. The data reveal dramatic increases in social dependency cases and unemployment with a slight decline in marriages, increase in divorces, and decline in population.

The revolutions which swept across central and eastern Europe during the 1980s, overthrowing the centralized planned economies and totalitarian political structures which had controlled these countries since at least the end of World War II, opened the way for new social policies. At various speeds, each nation began to introduce some measure of both market economies and democratic political processes. Of necessity this resulted in substantial disruption of the existing state of society, and generated changes which were not always anticipated or intended. This paper will focus on demographic data related to social dependency of families, marriage and divorce, employment, and population growth in Slovakia. The quantitative data is derived from statistical sources in Slovakia accessible to the first author. The qualitative data came from the life experiences of the first author who was born and raised in Slovakia and from interviews conducted by the second author, who has spent several



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months each year since 1990 in central Europe either on research grants, teaching English, living with local families, and rekindling old acquaintances.

**Social Dependency of Families**

During the forty years of state control, prior to the Velvet Revolution in November of 1989, family welfare was almost completely determined by the state, largely through compulsory state employment for all, state medical care for everyone, and state-provided education. The transition to market economies in 1990, however, began to shift responsibilities from the state to individuals or family units, with progressively less assistance provided by the state. A welfare program formally established in 1990 specifically provided for registration at local government offices of "socially-dependent families" – families unable to provide for their own elementary requirements. In 1990, there were 19,007 such families, but this had increased by 1993 to 123,800 families registered - a 651.3% increase (see Table 1).

In addition, the number of children born out of wedlock rose. In 1988 there were 5,714 children born out of wedlock with a continuous increase each year culminating in 7,788 such children in 1993 (a 36.3% increase).

Very little data concerning socially-dependent families are available outside of the census conducted each decade. In 1991 (the last census) 86.8% of the family households had both parents present (see Table 2). Of the households, 30.2% were without dependent children. The modal number of children for the households with children was two (46.2%), while 33.5% had one dependent child.

Although single parent households made up only 13.4% of the households in 1991, 48.1% of them were without dependent children. Among single parent households with dependent children only 28.9% had two children; 61.9% had one child. Informants working in social welfare agencies stated that single parent families made up a high percentage of the total of socially-dependent families immediately after the collapse of the totalitarian system, but that the percentage has been falling since then. While the majority of single parent families are socially dependent, single parent families make up



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Table 1. Demographic Variables from Slovakian Decade Census in 1991 in number and percentage

| Variables | Year 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|
| Population | 5,251,120 | 5,276,186 | 5,297,774 | 5,283,404 | 5,300,020 | 5,336,400 |
| Number of socially dependent families | — | — | 19,007 | 33,221 | 98,589 | 123,800 |
| Number of families with dependent children | — | — | 863,955 | 864,213 | 864,816 | 865,734 |
| Number of marriages | 37,493 | 36,525 | 40,435 | 32,721 | 33,880 | 30,771 |
| Number of marriages/1000 population | 7.1 | 6.9 | 7.6 | 6.2 | 6.4 | 5.8 |
| Number of divorces | 8,270 | 8,304 | 8,867 | 7,893 | 8,057 | 8,143 |
| Number of divorces/1000 | 1.57 | 1.57 | 1.67 | 1.49 | 1.52 | 1.53 |
| Marital Status of men | | | | | | |
| Single | 1,210,753 | 1,214,882 | 1,215,163 | 1,200,758 | 1,203,593 | 1,210,703 |
| Married | 1,252,771 | 1,256,111 | 1,262,690 | 1,260,951 | 1,262,406 | 1,261,380 |
| Divorced | 59,096 | 62,292 | 65,800 | 63,064 | 66,370 | 70,189 |
| Widowed | 54,198 | 53,210 | 52,260 | 58,457 | 58,161 | 57,775 |
| Marital status of women | | | | | | |
| Single | 1,053,280 | 1,056,800 | 1,056,400 | 1,042,125 | 1,044,774 | 1,050,591 |
| Married | 1,253,972 | 1,257,211 | 1,263,589 | 1,263,271 | 1,264,449 | 1,263,791 |
| Divorced | 83,314 | 87,546 | 92,324 | 91,184 | 95,583 | 100,420 |
| Widowed | 296,836 | 299,611 | 302,477 | 316,067 | 319,119 | 321,606 |
| Average age of bridesgrooms | — | 24.6 | — | — | — | 25.1 |
| Average age of brides | — | 21.9 | — | — | — | 22.4 |
| Number of abortions (age 15-49) | 59,352 | 56,307 | 58,176 | 53,141 | 49,516 | 45,552 |
| Number of abortions/1000 | 41.6 | 39.0 | 42.3 | 39.3 | 36.0 | 33.5 |
| Fertility (# of live births/1000) | 15.9 | 15.2 | 15.1 | 14.9 | 14.1 | 13.8 |
| Natural increase/1000 population | 5.9 | 5.0 | 4.8 | 4.6 | 4.0 | 3.9 |
| Number of children born out of wedlock | 5,714 | 5,764 | 6,085 | 7,016 | 7,286 | 7,788 |
| Number of women on maternity leave | 126,014 | 124,886 | 137,881 | 146,842 | 133,490 | 115,566 |
| Total number in the labor force | 2,509,698 | 2,504,079 | 2,450,615 | 2,151,584 | 2,174,562 | 2,166,000 |
| Number of women in the labor force | 1,141,484 | 1,138,192 | 1,094,423 | 931,031 | 910,749 | 992,000 |
| Total number in private employment | — | 438,468 | 492,510 | 556,096 | 618,413 | 786,000 |
| Number of women in private employment | — | 184,768 | 185,859 | 195,038 | 217,975 | 320,000 |
| Average wages/month | 3,020 | 3,090 | 3,217 | 3,748 | 4,519 | 5,261 |

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Table 2. Demographic Variables for Slovakian Decade Census 1991 in number and percentage

| Variables | 1991 | | |
|---|---|---|---|
| Number of family households | 1,425,404 | | |
| Number of complete family households | 1,234,473 (86.6%) | | |
| Complete without dependent children | | 472,137 (30.2%) | |
| Complete with dependent children | | 762,336 (69.8%) | |
| Complete with 1 dep. child | | | 255,343 (33.5%) |
| Complete with 2 dep. children | | | 351,986 (46.2%) |
| Complete with 3 dep. children | | | 118,438 (15.5%) |
| Complete with 4+ dep. children | | | 36,587 ( 4.8%) |
| Number of single parent households | 190,931 (13.4%) | | |
| Single wihtout dependent children | | 91,785 (48.1%) | |
| Single with dependent children | | 99,146 (51.9%) | |
| Single with 1 dep. child | | | 61,339 (61.9%) |
| Single with 2 dep. children | | | 28,640 (28.9%) |
| Single with 3+ dep. children | | | 9,167 ( 9.2%) |



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progressively fewer of the socially-dependent families. In addition, there were extremely few cases of single parent families where the mother was absent (estimated to be 2%). Occasionally, the mother would abandon her family, be sent to prison, or take a long-term job abroad, but in divorce cases the children almost always stayed with the mother. Unemployment is reported to be high and increasing among the socially-dependent families – especially problematic is the single parent mother who is on maternity leave. Piscova (1994) reports that about 38% of the socially dependent families are of this type. These women report that their loneliness, the bleak view of their future, and their lack of financial resources make it extremely difficult for them to remain a caring parent. Such a situation could also result in a decline in the status of motherhood as has often been reported in Western countries with such families being less able to provide the historical function of child socialization.

**Marriage and Divorce**

In 1989 and 1990, there was a rise in the number of marriages, both in absolute numbers and as a percentage of the population (40,435 and 7.6%), but the figure then began to decline, falling to 30,771 in 1993 (5.8 per 1,000 population). While divorce followed a similar pattern through 1990, when there was a high of 8,867 divorces (1.67 per 1,000 population), the number of divorces dropped in 1991 (7,893 or 1.49 per 1.000 population) but then began to rise through the next two years reaching 8,143 in 1993 (1.53 per 1,000 population). Consequently, the ratio of marriages to divorces dropped somewhat from 4.5/1 in 1988 to 3.8/1 in 1993. The marital status of men in 1988 was 47.0% single, 48.6% married, 2.3% divorced, and 2.1% widowed. For women in the same year, there were fewer women single (39.2%), fewer women married (46.7%), more divorced (3.1%), and more widowed (11.0%). This situation continued through 1993 where there were more single men (46.5% to 38.4%), more married men (48.7% to 46.4%), fewer men divorced (2.6% to 3.5%), and fewer men widowed (2.2% to 11.7%). Filadelfiova and Piscove (1994) also reported that divorced males were more prone to remarry whereas divorced females more often remained unmarried. Accompanying these trends was the higher age at marriage for both men and women. In 1989 the average age for marriage was 24.6 years for men



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and 21.9 years for women; by 1993 this had increased by one-half year to 25.1 for men and 22.4 for women; however, there is great variation in this average by region with urban residents marrying much later than their rural counterparts.

The housing shortage as well as the increased cost resulting from the privatization of housing has meant that young people commonly continue to live with parents even after marriage. Informants at The International Centre for Family Studies conducted a survey which revealed that 95% of females and 83% of males lived with their parents up to the time of marriage and that 80% of young couples lived with one set of parents for one to five years after marriage. They also reported that unmarried cohabitation had become more common since 1990 and was resulting in more and more unwed pregnancies (it has been estimated that almost one half of the brides are pregnant at the time of their marriage). Many families, however, planned for the eventual marriage of their offspring by holding on to the housing of relatives who moved to retirement housing, who migrated to cities, or who died. Rural families also commonly helped each other build homes for their relatives. Young people typically told us that they were in no hurry to marry and that they first needed to establish themselves in the job market and obtain suitable housing.

Divorce is still relatively low in Slovakia, partially due to the strong influence of the Catholic Church. In addition, the official state policy of the former regime placed high priority on maintaining the family as the primary socializing institution. Divorce was allowed but usually discouraged; and in order to obtain preferential housing and loans as well as tax reliefs, one had to be married. This probably resulted in earlier marriages among those who were still economically dependent, and in fewer divorces even in the case of unhappy marriages.

**Population Statistics**

The number of abortions for women between the ages of 15 and 49 has been dropping since the Velvet Revolution, with 59,352 abortions (41.6 per 1,000 population) in 1988 to 45,552 (33.5 per 1,000 population) in 1993. Abortion has been consistently highest



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among married women in their late 20's and early 30's who already have one or more children (Filadelfiova & Piscova, 1944). The fertility rate, or number of live births per 1,000 population, has similarly declined from 1988, when the figure was 15.9, to 13.8 in 1993. Accompanying this trend, the natural increase per 1,000 population, which was 5.9 in 1988, slowed to 3.9 in 1993. Although the rate of population increase continues to drop, in Slovakia it is still above zero – in contrast to many other central European countries (such as Bulgaria) where the population is actually declining.

Just as the fertility rate has been declining since 1990, so also has the abortion rate. This is a virtually unique phenomenon. In the past, in Slovakia as well as most other countries, a decline in the abortion rate corresponded to an increase in the fertility rate. The strong influence of the Catholic Church, which is against abortion, is a factor in Slovakia. During the Communist regime, by contrast, abortion was legal; and unlike some other central European countries such as Poland, in Slovakia there has been no strong move to make it illegal. Some have claimed (Filadelfiova and Piscova, 1994) that Slovaks tended to use abortion as the primary means of birth control, but other methods of birth control have increased since 1990. Rychtarikova (1993), however, reports that only 10.6% of Slovak women and 13.1% of Czech women currently report using an IUD, and even less report using hormonal methods (2.2% in Slovakia and 4.3% in the Czech Republic). Prior to 1989, people tended to marry younger, have a child soon after marriage, and complete childbearing before the age of 30. Some writers (cf. Burcin, Kucera, and Kucera, 1993) believe that the rising demand for more advanced job skills and labor efficiency is responsible for shifting marriage and childbearing to later years as well as for the fall in the birthrate. With the elimination of state paternalism and the growing costs of child rearing, decisions concerning childbearing are more likely to be affected by decisions relating to careers, social position, consumption orientation, and a more self-indulgent lifestyle. Another external factor that probably encourages fewer children, is the fact that maternity leave is increasingly viewed as dysfunctional by the labor market, and long-term child care is not readily available.



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**Female Employment**

While almost everyone was employed by the state under the Communist regime, employment patterns have changed dramatically since then. In 1988 and 1989, women constituted 45.5% of the work force. Beginning in 1990, however, the percentage of working women fell to 41.9% in 1992, but increased to 45.9% in 1993. In addition to unemployment, the second major change has been the dramatic increase of private enterprise, with men participating in this activity more than women. In 1989 there were only 438,468 people employed in private enterprise with women comprising 41.1% of these employees. By 1991, there were 555,096 employees in private enterprise (an increase of 26.6%) but only 35.10% of them were women. By 1993 there were 786,000 private employees (an accumulated increase of 79.3%) but women now made up 40.7% of the privately employed workforce.

In 1990 the registered unemployment rate for women was 1.2% and for men 0.8%; in 1991 these rates were 6.9% for women and 6.3% for men; the 1992 figures were 11.7% and 11.I%; and in 1993 they were 12.9% and 12.5% (Employment Observatory, 1994). Some authors (cf. Matynia, 1994) claim that women are paid less for the same job, and that, after immigrants, women are the first to lose their jobs. Although women worked alongside men under the Communist regime there was little equality at home, where women were still responsible for the housework and child care.

There is substantial gender segregation and gender preference in hiring practices, and this is openly expressed in newspaper employment advertisements. Some women who had felt forced to work have opted to get out of the job market and to return to their homes (Siklova, 1991), so that they experience less stress and are not always exhausted. Single women, of course, do not have this choice and are adamant about working. One such informant observed that "during Communism we had very little, but then there was very little available. Now we know about so many things to have, and it is very hard not to have enough money to buy all the things our children want". Another unemployed unmarried woman said that before she became unemployed she had not realized how much self-fulfillment she obtained from working, and that she feared a nervous breakdown



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if she did not find a job soon. A similar attitude is to be found amongst unemployed men: jobs do more than generate revenue, they largely shape people, structure their daily activities, and determine their place in society.

Many females feel that the confusion of the post-Communist period brought little positive. They complain of a male-dominated world of hustlers and commercialism in which true women's needs are ignored (Smale, 1995). Child care, nursery schools, and even kindergartens are closing as their buildings are returned to pre-Communist owners or as funds are not forthcoming from the overwhelmingly overburdened state welfare system or as rapidly rising charges for such services become unaffordable.

Young people make up a large proportion of the unemployed, particularly those under 24 years of age. New laws only require youths to continue their education until 15 years of age (9th grade), whereas under the former regime more years of education was a state requisite; and for those few who would not or could not comply, camps were provided where some kind of trade skill could be learned. But today's jobs require more advanced levels of education which many people do not have, and this is particularly problematic for school dropouts.

**Conclusion**

Following the collapse of socialism in 1989 and the continual modernization and transformation of Slovak society, decisive changes were to be expected in family related behavior. As of 1993, however, no rapid decrease in marriage rates or rapid increase in divorce rates were evidenced. Increased unemployment and social dependency, on the other hand, have been more pronounced than was expected.

The Velvet Revolution of 1989 and subsequent movement away from a planned, central economy has provided freedom but also removed much of the security provided by the state. Families are now finding that they have to provide for their own income, make their own decisions, and face the consequences of their own actions. Young families in particular lack basic economic security, and often have little time for raising children. They also have difficultly in obtaining the education and skills increasingly necessary for advancement, with fewer places to turn to for help. The middle aged, however, face a



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possibly even more stressful situation, since employers are often slow to hire them as they are thought to be too rigid in their ways and incapable of accepting the idea that "the customer is always right." In addition, their offspring are frequently dependent on them. The older generation is also required to pay an increasing part of the costs of retirement despite the fact that the former socialist society had not had provided them with the opportunity to accumulate the means to do this.

The Slovak social system has not as yet developed adequate methods of coping with such a monumental transition. Current welfare assistance is inadequate to meet subsistence levels, although there is a strong desire at the highest political level to rectify this problem as well as to strengthen the value of marriage and parenthood in society. How this will be achieved is difficult to forecast, in light of the fact that the underlying demographic and socioeconomic conditions identified here continue to change rapidly and sometimes dramatically. Also, new ideologies are coming and going so quickly that social policies are barely formulated and seldom implemented long enough to provide an adequate basis for appraisal. The opinion is widely held that some sort of bridge is needed to span the transition from the old system of state paternalism and state control to the new goal of liberalization in which each family must fend for itself. Many informants said they did not want the government to approach social issues in the abrupt manner in which it tackled the housing issue, when all state housing was offered for sale too suddenly. Families, particularly young families, were thought to need much more help in the difficult transition from Communism.

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# Etruscans (Tursha) at Troy and on the Phaistos Disk

Edgar Bowden

Two crested heads from Etruria, 700-500 BCE, are identified as derived from the crested chieftain-shaman (sign 2) on the Phaistos disk and an inscription on a 13th century BCE vase from Hissarlik (Troy) is interpreted in Cypro-Minoan II syllabary as an invocation of Apollo and of Etruscan *Calu* (deity of Hades) and, cryptically, of *Turms* (Hermes). An amended model of a conjoint Achaean-Tursha horse-breeding culture in N.W. Anatolia during the 2nd millennium BCE, influenced by Luwian and Minoan culture, is proposed, but the remoter origins of the Etruscans remain problematical. The resemblance of 14 Phaistos disk pictograms to Luwian hieroglyphics is referenced, but unlike in Greek, their Luwian acrophones do not p-alliterate as required by the verse metrics, thus eliminating Luwian as the disk's language.

In my 1992 monograph (*op. cit.)* and its summary in this journal (Bowden 1993) describing alliterative verse metrics in the Phaistos disk text and the extensive Linear B relationships (*op. cit.* 1992, Chapter 3) of its deficient and quasi-consonantal syllabary (*op. cit.*, Appendix pp. 249-58), the apparent Luwian connections such as sign 24, 'Lycian hut' (*op. cit.*, p. 24 *etc.*), Luwian 7-metrical liturgy, (Watkins, pp. 58-61) and the statistically significant paucity of bare vowel-*o* on Side B (*op. cit.*, Appendix p. 258) led me to propose that the non-Greek aspects of the text originated in a joint Achaean-Luwian culture of Greek-speaking male-dominant horse pastoralists assumed to have entered N.W. Anatolia from Thrace about 1900 BCE, cohabiting with female-dominant Luwians who had already come via the Caucasus in the 3rd millennium. The fact that 70 per cent of the 26 distinct phonemes in the extremely homophonous writing system are represented by pictograms identifiable as prototypes of Linear B signs makes Greek the most probable language of the text and this was assumed to have been brought to N.W. Anatolia by Greeks in the 15th century BCE, two centuries later than Pernier's assumed date for



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the Phaistos disk, these Greeks having seen Linear A writing in Crete.

But the headcrests of Fig. 1*d* (cut from Bloch, Pl. 30; the ossuary vase has convoluted sauvastikas on the sides, probably of N.W. Anatolian derivation) and Fig. 1*e* (traced and photoreduced from Mayani, Pl. opp. p. 358), plus a sequence of four signs common to a Trojan and Etruscan text (Fig. 2) show that my horse pastoralist and Luwian interpretations can be better explained by an equidominant horse-breeding tribal society in the Troad and Arzawa of proto-Etruscans (Tursha), probably with a Greek priesthood and chieftainship, though still influenced by Luwian and Minoan cultures. The occipital 'horn' on the Fig. 1*e* crested head is found also on Villanovan pottery cinerary urns from Etruria, habitually capped with the crested Villanovan helmet (Cary and Scullard, Fig. 2.1); its significance is unknown, unless it is a phallic symbol to avert evil from behind, perhaps as part of the mystical cult of *Turm* (Hermes).

The misidentification of the sign 2 headcrest (Fig. 1*c*) with the war hat of the Sea Peoples (Fig. 1*f*) still persists after 80 years among researchers who copy uncritically from Pernier and Evans without carefully examining the Medinet Habu *bas-relief* showing a decorated circlet with upstanding feathers around it and a chinstrap and neck-guard. According to Herodotus, Lycian sailors in the 5th century BCE wore a cap "set about with feathers" (Barnett, p. 363), so these Sea People at least must have been Lycian, not Tursha.

There is sufficient archaeological and historical evidence of Etruscan horsemanship from Villanovan times (Grant, pp. 181, 213, 222, 228; Hencken, p. 87 and pp. 28, 114; Mayani, p. 103) through their reputed building of the Roman *Circus Maximus* horse racing stadium (Bonfante, p. 260) and their horse breeding (Kellar, pp. 56, 127) to support my interpretation (Bowden 1992, pp. 30-32 *etc.*) of the sign 2 headcrest as a shamanistic horse's mane tribal totem symbol. Figs. 1*a,b* show that the same headcrest was to be seen also in Minoan Crete before 1700 BCE, so that unless the men represented by this clay figurine and pictograph were visitors from Troy, some of the Linear A or Cretan hieroglyphic texts of that period may be in a language related to Etruscan, though Greek is more likely. There is said to be evidence (Pallottino, p. 210) that Etruscan had been written syl-



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labically before the west Greek alphabet was adopted in the 7th century BCE and Fig. 2 provides further evidence. Although the headcrest in Fig. 1*e*, though not that in Fig. 1*d*, is a mere vestige of the prominent display a millennium earlier, it and the sloping and elongated skull of its wearer indicate a cultural link and support my previous suggestion (*op. cit.* 1992, p. 133) that the horse breeders practised infant skull binding at least in the ruling class. The strongly aquiline nose may stem from the hypothetical Armenoid population substratum of Anatolia (Angel, p. 12). The same profile is seen on the Etruscan gods *Kharun*, escort of souls to Hades (Gr. *Charon*) (Bonfante, p. 162 and Fig. VIII-50; Yonah and Shatzman, p. 267) and *Tarchun*, who may derive from the Euro-Anatolian weather god *Tarhundas* and relate to the early Etruscan aristocratic Tarquin (Etr. *Tarkhu*) family, who figure in the legendary declaration of Etruscan religious doctrine (Keller, pp. 79-80).Apparently, Etruscan society in both Anatolia and Italy comprised two distinct ethnic groups and it would not be surprising if these had originally also been linguistically distinct, which may explain the 90 per cent Indo-European vocabulary grafted onto a presumably non-Indo-European grammatical system (Carnoy; Pallottino).

**Apollo, Calu and Turms at Troy**

The four signs doubly underlined with an arrow in Fig. 2*a* (Schliemann 1875, p. 50, Fig. 33) are in the Cypro-Minoan II syllabary (C-M II; Best and Woudhuizen, *The oldest scripts in Cyprus*, in *op. cit.*, pp. 98-131, Fig. 3, redrawn here as Fig. 2*c*) and can be read as *Tu.lu.lu.lu.*, not an identifiable word in any language. They also occur in very similar form, but written in the usual Etruscan retrograde direction, near the beginning of Side 1 of the spirally inscribed Magliano (Etr. *Heba*) lead plaque. The available photograph of one side of the plaque (Strong, p. 102) is too dark to be worth reproducing here; the transcription published by Emiline Richardson (in Bonfante, p. 218, Fig. VII-7, probably from Milani 1893, pp. 38 ff.) is reproduced here as Fig. 2*b*, which reads anti-clockwise from the periphery but looking from the centre of the circle, the reverse of the Phaistos disk. Apart from the retrograde direction, the differences of form are



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trivial; the crosses are oblique in Etruscan, where as alphabetic characters they would represent sibillant-s; the inverted Greek character *psi* does not exist in the Etruscan alphabet, but in its 'correct' orientation, seen three positions to the left of the 'cryptonym', it would denote the guttaral aspirate *kh*, Gr. *chi*. For many years, this sign has been misread by some authors as the Roman numeral L = 50, giving LXXX = 80 for the entire set of four characters; but Etr. L is as seen two positions to the right of the 'cryptonym'; it is occasionally written inverted, but never as *psi*, which does not exist in any of the archaic Greek alphabets (Jeffery, Fig. 104). The origin of Roman L = 50 is in fact Gr. *psi*, but its V-form became progressively flattened and then the left basal stroke was discarded, yielding L. In the C-M II Trojan inscription, this inverted *psi* is drawn with the vertical stroke to one side, and this also occurs sometimes in the (upright) Etruscan character, though this may be mere coincidence due to hasty writing. Even with the first character as *psi*, the four signs would not form an Etruscan word, nor are they a numeral. As the Magliano text is a set of prescriptions for sacrifices to gods, and the Trojan inscription also seems to contain Etruscan names of deities, I suggest that these four characters in C-M II are a cryptonym of a deity whose name was taboo, like Yahweh, and that by the historical Etruscan period they were still used for the same purpose, even though unreadable except by priests. As Mayani comments (*op. cit.*, p. 252): "The whole of Etruscan religion was lapped in an air of mystery".

The continuing contentiousness of the archaic Etruscan in which the complicated syntax of the Magliano text is expressed makes it futile to present a complete reading of it here, but it is known to contain the names *Cautha*, Etruscan sun god, from I-E. *kheu*, 'burn', cogn. Engl. 'caustic' (Carnoy); *falza-thi*, 'in the sky' (Pallottino); *Ais-er-as*, 'for (*-as*) the gods (plur. *-er*); "(the gift of) Mars", god of vegetable fertility as well as war, cf. *Kubela* on the Phaistos disk (Bowden 1992); *Thanr . . . Calu*, goddess of death, deity of the (hidden) Underworld, Hades, Gr. *aídēs*, 'unseen'; Etr. *calu* from I-E. *khel*, 'hide', cogn. Engl. 'Hell' (Carnoy); and *Tin*, Etruscan Jupiter, Gr. *Zeus pater*, 'sky father', Etr. *tin* from I-E. *dino*, 'day' (Carnoy). In late Etruscan Apollon is *Aplu*, with the stress shifted from the second to the first



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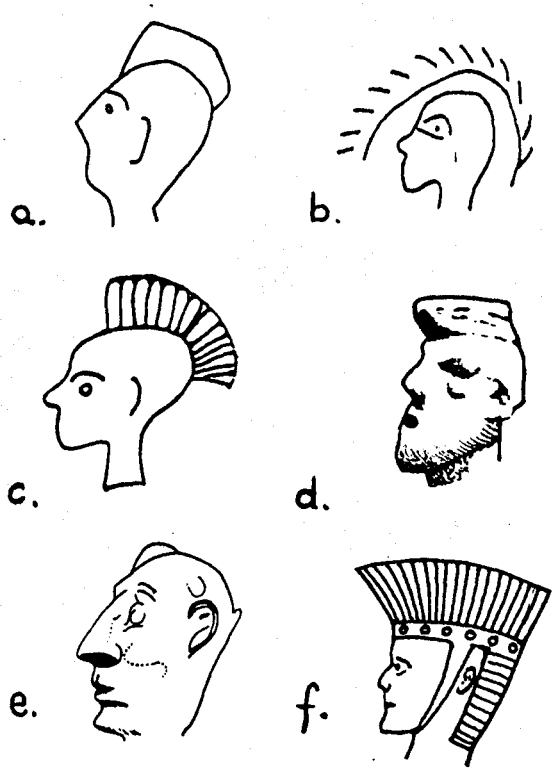


**Fig. 1** *a*, *b*. Votive figurine and hieroglyph, Crete, 2000-1700 BCE (Herakleion Museum); *c*. Phaistos disk sign 2; *d*. Etruscan crested guardian daimon on Villanovan ceramic ossuary, *circa* 700 BCE (Florence Museum); *e*. Etruscan crested bronze head, 5th century BCE (Parma Museum); *f*. Sea Peoples' feather-encircled war hat, *circa* 1190 BCE (Medinet Habu, Egypt).



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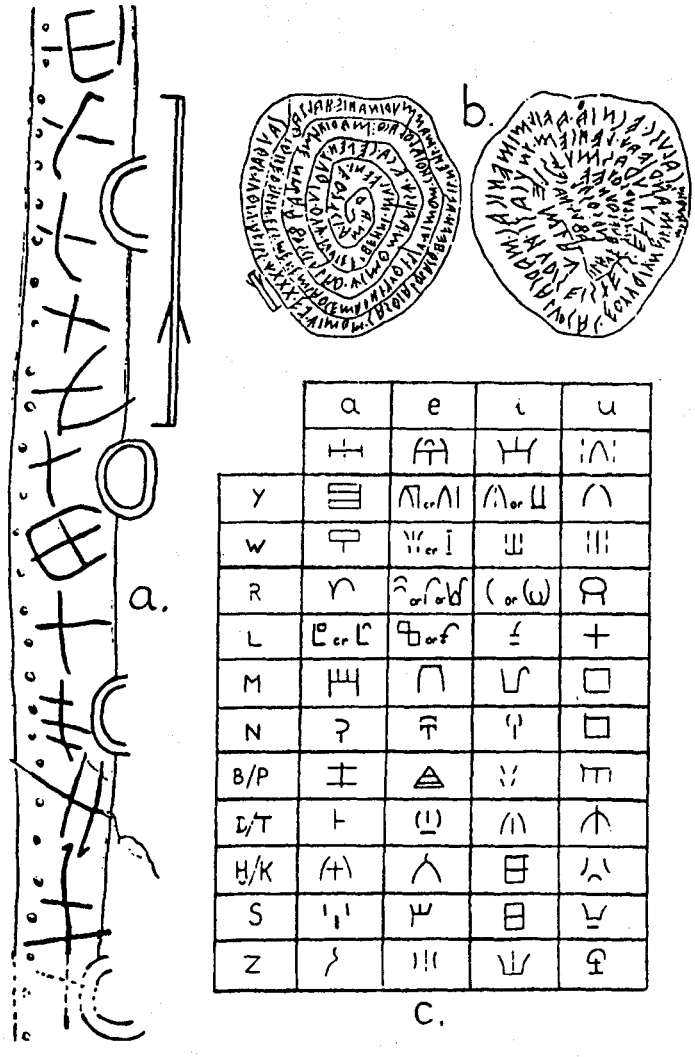


**Fig 2.** *a.* Inscription on vase from Hissarlik (Schliemann); *b.* Magliano lead plaque inscription (Richardson); *c.* Cypro-Minoan II syllabary (Best and Woudhuizen).



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syllable and the resulting unstressed second vowel dropped, as usual in Etruscan from the 5th century BCE (*syncope*, Pallottino, p. 208; *cf.* the initial alliterative stress in Stanza B, Bowden 1992, Fig. 6, on Side B thought to have been written in Greek by a non-Greek). The putative four-character cryptonym on the Magliano plaque occurs in the first of the text's five sections, dedicated to *Cautha* the sun god.

The C-M II inscription on Schliemann's vase from Hissarlik is difficult to read, quite apart from the cryptonym, though the direction of this, indicated by its Magliano version, at least gives the orthgrade direction of the entire text. It consists of eleven signs presumably starting at the handle on the left in Schliemann's Fig. 34, though his original of Fig. 2*a* cuts the leftmost character just at the crucial point where it is necessary to deduce whether or not the sign had a third vertical cross-stroke like the C-M II character *a*, third from the left. All of Schliemann's Hissarlik finds are believed to have disappeared from the Berlin Archaeological Museum near the end of World War II, so the engravings in his three-volume account of the excavations (*op. cit.*) are the only existing record of the dozen specimens of writing he found, unless his photographs of some of them have been preserved, but not unfortunately of this inscription, because Schliemann writes that he initially assumed the signs on this vase to be mere cult symbols, rather than writing, and did not bother to have it photographed. The engraving shows cracks on the vase and Schliemann writes that many of his pottery finds fell to pieces on being dug out, so it is quite likely this inscription was extensively defaced by cracks even from the moment it was lifted. Schliemann's illustration of the complete vase does not show the inscription clearly or fully enough to be of much use, except that it confirms the four handles as being equally spaced and the same size, whereas on his linear figure one of the handles has been not only divided between the two ends but its two parts do not comprise the full original width of the handle. Cutting the original figure and restoring the left handle to the same width as the other three leaves a gap in which I have drawn dotted what may have been the original appearance of this initial sign, the important point being that either there was a third short vertical cross-stroke just above the handle, or this character is not in the C-M II set:



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in the latter case it might be a local Trojan variant of C-M II, but the inscription is then unlikely ever to be readable, because Schliemann's dozen short texts are the only ones known from Hissarlik (none from the 2nd millennium BCE were found in Blegen's excavations, *op. cit.*) and they are in two or three different writing systems, so the material for each is inadequate for comparative decipherment.This vase seems to bear the only text in C-M II.

If the first sign is equivalent to the third, then the inscription reads as follows, with word dividers inserted according to its apparent semantic structure in Etruscan or a closely related language:

*a.pa.a.lu/ ka.lu/ tu.lu.lu.lu/ pu* or *tu*?

The first four characters are apparently an archaic Etruscan rendering of Gr. *Appollon*, with short and long *o*, absent in Etruscan, expressed as *a* and *u*, and prior to the stress-shift and syncope of later Etruscan. The second word is Etr. *Calu*, 'god of the hidden underworld', as on the Magliano plaque. The last sign may not be from the C-M II syllabary, but it could be *pu* or *tu* with a horizontal line scratched underneath; in any case I cannot yet suggest an interpretation for it. It happens to bear a close resemblance to the two signs in the Magliano plaque following the 'cryptonym', but turned sideways; they are the Etruscan letters *ez*, which in the Magliano context may be a variant of Etr. *es*, *as*, 'sacrifice', I-E. *as*, 'burn' (Carnoy), but it is not obvious how a C-M II sign could be transformed into an Etruscan word a millennium later, so the similarity is probably a coincidence.

The occurrence of Calu associated with Apollo may refer to the latter's identification with the sun in Greek myth and the disappearance of the sun below the horizon each night, especially in the long winter. In the Magliano text, sacrifices (probably human) are despatched to the underworld and it is likely that Etr. *Turms*, Gr. *Hermes Psychopompos*, the escort of souls to Hades, conducted them there. *Turms* is the protector of souls against *Kharun*, an Etruscan demoniacal figure. There are four characters in the putative cryptonym and four is said to be the sacred number of Hermes (*Encyclopaedia Britannica*), as well as the number of syllabic characters in his Etruscan name *Tu.r.m.s*, the first of which is the same as in the cryptonym. The C-M II cross for *lu* may have been used in substitution here because of Etr. *luc*, *lauc*, 'order,



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command', by metaphor from I-E. *leukh*, 'brilliance' (Carnoy), hence as in the Homeric image of the outstanding heroes in their shining bronze armour, 'eminent person, leader', thus Etr. *lucumon*, 'chieftain, king'. There is an Etruscan statue (Mayani, Pl. opp. p. 208) of *Aplu Svulare*, 'Apollo revealed', which may imply that an *Aplu Calu*, 'hidden', also existed in Etruscan mysticism. It would be logical if *Turms*, the god able to pass back and forth between the sky-realm and the realm of Hades, the unseen, formed the third aspect of a sacred trinity, concealed beneath the cryptonym because of the potency of this third component, the power of generation (the phallic *herms*, or boundary markers of Hermes; Brown, p.14) and the immunity from death. This cult of *Thrice-greatest Hermes* (Mead) may underly the preoccupation with sex and death in Etruscan society. The recurrence of this cryptonym over a gap of a thousand years and two thousand miles, together with the ossuary guardian daimon and crested bronze head, proves almost beyond doubt that the ancient belief is correct, that Etruscans did migrate, whether in small but dominant groups or *en masse*, from northwest Anatolia to Italy, some time between about 1400 BCE and 800 BCE. A.H. Sayce (in Schliemann 1884, Preface, p.xxiii) dates the Hissarlik inscriptions to the 13th century BCE. Apollo at Troy is attested by the invocation of him as a deity of Wilusa in Hittite Muwatillis's treaty with Alaksandus of Wilusa, *circa* 1300 BCE (Gurney p. 34; Bowden 1992, Addendum p. xv).

**Etruscan links with Anatolia**

Other items that may support an Etruscan presence in N. W. Anatolia and on the Phaistos disk during the mid-2nd millennium BCE are as follows, though not all have yet been fully substantiated.

1. My suggestion (*op. cit.*, p. 40) that the 31 words on either side of the Phaistos disk, with the spacing and syntax on Side B showing that one, a verb, was omitted (pp. 161, 165) by the non-Greek scribe of that side (p. 256), were related to a calendar with some 31-day months like that of Imperial Rome and that this may have been taken to Italy by Etruscans. It was whilst seeking confirmation of this hypothesis that I happened upon the Etruscan crested heads, but I have not yet found evidence in the literature for 31-day months in the Etruscan



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calendar.Michels traces Roman 31-day months back to the 5th century BCE but notes that the calendar's origins are lost in legend. Heurgon (p. 183) says it was taken for granted unstated by Romans that their calendar came from the Etruscans. Presumably in Anatolia the Tursha acquired the Assyrian lunisolar calendar from the Kanesh *karum*, with 12 months of 30 days each plus 5 extra days, except that someone unknown to history had distributed these 5 days to form some 31-day months by the 15th century BCE.

2. The possibility that the complex alliterative metrics of the Phaistos disk also occur in Etruscan texts. According to Pallottino (*op.cit.*, p.155): "The presence has often been pointed out in Etruscan texts of regular groupings of words and syllables, repetitions, alliterations, rhymes, *etc.*, which point to a marked disposition for the rhythmic form". But there is no evidence in the Magliano double-spiral ritual text for anything more than limited non-metrical assonances. Assonant pairs of words are noted by Wellard (p.191), who on pp. 85 and 186 twice quotes, with variations indicated here in parentheses, two versions of an incantatory stanza beginning the seventh section of the Zagreb mummy-wrapping text. Each line of 7-8 words begins with: (*male*, not in first line?) *ceia hia*, followed by: *etnam ciz vacl trin vale (*or *velthre?) / etnam ciz vacle ais vale / trin etnam ciz ale / etnam ciz vacle vile vale /*. Although there are seven v-alliterations, they are not metrically distributed; unlike the Phaistos disk the line-ends generally rhyme; and there is no half-line structure, though each line has a quasi-identical preamble. This stanza, said to be unreadable but referring to god (*ais*), could be the final debased form of a thousand year old, highly skilled and diversified alliterative metrical verse tradition exemplified on the Phaistos disk, but influenced by the same transition from alliteration to rhyming seen in Anglo-Saxon verse of the 14th century BCE (Bowden 1992, p.17). Latin Saturnian verse (Harvey), two centuries later than the Magliano plaque, shows regular alliterative metre similar to that of Stanza B on the Phaistos disk (Bowden 1992 and 1993, Fig 6). Possibly the Etruscans earlier used metrical alliteration in the lyric dances of their religious cult, but it was rarely written except by Greeks a millennium earlier and the Romans after the settlement in Italy.



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3. Etruscan house-tombs (Bonfante, Fig.V-18) may derive from the 'abandoned house of the dead', sign 24, 'Lycian hut', on the Phaistos disk, later elaborated in Anatolia as the shrine of a death-cult (Bowden 1992, p. 34 *etc.*), though most do not resemble sign 24 and Lycian house-tombs architecturally, so that the *concept* was borrowed, then reshaped during the following millennium to conform with pre-existing house styles in Etruria. One exception (Goldscheider, p. 18, Fig. *c*, wooden-hut tomb, Chiusi, 300 BCE, Berlin Museum) does show the triple-layered form of Lycian house-tombs (Bowden 1992, Fig. 12*c*). Another (Goldscheider p. 18, Fig. *d*, wooden temple, Chiusi, 500 BCE, British Museum) has Cybele seated at the temple portal and her two guardian panthers couchant on its roof (*cf. Sipulos* < **sidj-pulos*, 'she sits in the gateway', Bowden 1992, p. 205), reinforcing the likelihood of an Anatolian Etruscan origin.

4. The Etruscan skill at irrigation, drainage and canal building (Yonah and Shatzman, p. 195) may relate to my suggestion (Bowden 1992, pp. 202-8) that the Scamander estuary was periodically dredged to keep it open for the inland port of Troy.

5. The historical Etruscan practice of human sacrifice by stabbing and dismemberment (Bonfante, p. 263) may relate to Section AI of the Phaistos disk (Bowden 1992, pp. 98-9) and the suggestion of excarnation as a means of disposing of the dead (*op. cit.*, p. 53 *etc.*).

6. The renown of Etruscans as seamen and pirates (Pallottino, p. 82), who were said to have invented the ram prow, may relate to sign 25 (Bowden 1992, Fig. 20).

7. The early Etruscan use of the double-bladed battle axe (Pallottino, p. 136) may relate to words A1 and B8 on the Phaistos disk, both of them containing the non-Greek stem *labrus*, 'double-axe', with word B8 prefixed by an axe determinative as identification for Greek-speakers.

8. Palatisation of dentals in Etruscan (Carnoy), *e.g.* I-E. *dh-* changing to *cb-*, could account for the *p/t* alliteration of Stanza B and Section A, where for example Gr. *mater*, 'mother', must have been mispronounced with a medial consonant resembling a labiovelar in order to fit the overall labial alliteration attested by several of the proto-Linear B signs.



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9. The statistically significant paucity of bare vowel-*o* on Side B (Bowden 1992, p. 258) corresponds to the absence of *o* in Etruscan as well as in Luwian noted in my monograph, while its presence on Side A argues against Luwian or Etruscan as the language of the Phaistos disk. Researchers who still favour Luwian as its language have not taken account of the complex alliterative metrics overlapping the extensive Linear B relationships, so that while the Greek dialect of the text remains undefined, there is little likelihood of a plausible cultistic and p-alliterative reading being achieved in any language as unlike Greek as Luwian. The vowel-contraction so evident in the text may not be that of an original Greek dialect, but the pronunciation, including palatised dentals, sonant-*n* accusative endings and palatal-*l*, of an Etruscanised Greek priesthood dating from the early 15th century BCE or earlier. But there is little likelihood of the text being in Etruscan, because the few signs occuring as grammatical suffix-markers do so on the Greek single-suffixing principle, whereas Etruscan typically, though not invariably, uses multiple and diverse suffixes (Pallottino, p. 213) and it is implausible that a writing system so obviously Greek as this crude prototype of Linear B would be devised for writing a substantially different language. A *developed* writing system may be usable for another language, but it is not credible that one so clearly half-developed as the Phaistos disk's would have been created with Greek acrophones (except sign 24, Luw. *parna*, 'house') for the expression of a markedly different language. The possibility that the text is in Luwian can be conclusively eliminated by the resemblance of at least 14 of its pictograms to Luwian hieroglyphs (Best, *op. cit.*, pp. 30-53; and Woudhuizen. Another half dozen resemblances are discountable because unspecific or based on misidentification). Four of these 14 must be p-alliterative because of the verse metrics, namely signs 14, 24, 27 and 29, but only one of the original Luwian acrophones is labial, as *pa* corresponding to P.D. sign 24, presumably for Luw. *parna*, 'house', as in my Greek decipherment, while the others are *tu*, *ku* and *u*. Evidently these Luwian hieroglyphs were borrowed by Etruscanised Achaean priest-scribes and renamed with Greek acronyms for a syllabary to write Greek, not Luwian. In any case, with a developed hieroglyphic syllabary already in use for Luwian, there would be no reason



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to create a substantially different version of it in northwest Anatolia merely to write a dialect of the same language.

## Conclusion

Even with a valid reading of the Phaistos disk and the above identification of proto-Etruscans in its text and in inscriptions at Troy, there are still not yet enough historical and epigraphical data to allow a complete explanation of the west Anatolian Bronze Age, nor of the ultimate origins of the Etruscans, who may have come from eastern Anatolia, if their language was indeed non-Indo-European though with an acquired Indo-European vocabulary, and their physiognomy Armenoid. At present, it seems that the population of west Anatolia was ethnically and linguistically diverse and intermixed, since there is evidence of Luwians contributing the sign 24 'house of the dead', a number of Luwian hieroglyphs and possibly the 7-metrical verse form of Stanza B, while it appears that the Etruscans' religious cult at the middle of the 2nd millennium BCE was written for the first time by a Greek-speaking priesthood, much as Latin was used by Christian Anglo-Saxon society in England to which a Celtic sub-stratum had contributed. Since there is clear evidence of horse breeding in the Troad throughout this period, was this an original Etruscan subsistence trait, or must it still be attributed to Greek-speaking pastoralist immigrants as previously suggested, considering that the horse was probably not indigenous to Anatolia? The question therefore remains: who were the Etruscans in Anatolia, ethnolinguistically, and what was their origin?

The essence of the problem is to explain economically the relationships of Phaistos disk complex metrics to those of Balkan agricultural fertility folk dances and Indian classical and religious dances; and, with alliteration, to verses of the Atharvaveda (Bowden 1992, Chapter 1 and Addendum). If all of these traits, plus the skull crest, were insignia of a human-sacrificial horse cult, then in principle horse pastoralism could have come to the Troad either with Achaeans through Thrace *circa* 1900 BCE, who subjected Tursha already there; or from Iran *via* Mesopatamia with Indo-Aryans who in the 4th-3rd



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millennia BCE herded onagers and founded the Lugal Zagessi dynasty at Kish *circa* 2700 BCE (the Sumerian *lugal*, 'man, big', cuneiform hieroglyph originally showed a man with a head-crest; Amundsen), then in the 2nd millennium, as 'Mitannians', introduced horse riding whilst founding a ruling dynasty over Hurrians. A male acrobat with skull crest is also shown in a wall carving at Alaca Hüyük near Hattusas, *circa* 1550-1450 BCE (Macqueen, Fig. 137). The southeasterly source is attractive in many ways, except that it requires the original cult ritual in Indo-Aryan to be converted into Greek by the Phaistos disk epoch, which complicates the model.

Since the proto-Linear B of the Phaistos disk must have been written no earlier than about 1450 BCE, while Cypro-Minoan, not Linear B, was in use at Troy by about 1250 BCE (Sayce, *vide supra*), this supports my earlier suggestion (Bowden 1992, p. 124) that a Hittite attack on Arzawa in the 14th century BCE ended the Greek presence in Anatolia for several centuries. But what happened to the Tursha? While they seem to have almost completely lost Greek literacy, they apparently retained traces of Greek religion; Apollo and Hermes at least. Was the conflict called the Trojan War an attempt by Greeks to restore the influence they had exerted over the Tursha in the 15th century BCE?

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# The Concept of Heredity in Western Thought: Part Three
# The Revival of Interest in Genetics

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As noted in the two preceding articles in this brief series,[1] European and American thought had historically recognized the role of heredity in shaping both human physiology and human personality. The early beliefs of the Classical and Medieval worlds were reinforced by an improved understanding of plant and animal breeding, which made especially rapid progress in the eighteenth and nineteenth centuries. Subsequently, the discoveries of Darwin and Mendel led to an even clearer recognition of the significance of the role of heredity in human affairs, and this reinforced interest in the possibility of applying to human beings the breeding techniques used so successfully with plants and animals.

Most early eugenicists were motivated by a philosophy close to the workings of nature. They perceived evolution as being competition not only between individuals carrying disparate genes but also between divergent populations and subspecies, each seeking control over the available resources, and in consequence they primarily contemplated the improvement of their own national stock. Nations were perceived as micro-races in the making. While not directly opposing the extension of eugenic goals to rival human populations, they regarded this as an objective which was not only beyond their power but beyond their responsibility and – under the laws of evolution – extraneous to the proper function of altruism. Altruism is a biological necessity where it assists genetic copies contained within the same breeding population or phylogenetic continuum to survive. In the course of hominid evolution, altruistic behavior emerged because it enhanced the survival chances of the breeding population to which the altruistic individual belonged: it

[1] See *The Mankind Quarterly*, Volume XXXV Number 3 (Spring 1995) and Volume XXXV Number 4 (Summer 1995).



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enhanced the competitive effectiveness of the altruist's own phylogenetic continuum.[2] This was in keeping with the evolutionary conditions that shaped the survival chances of all complex life forms in the material universe, and the purpose of scientific investigation was perceived to be the development of sound principles on which to base rational patterns of intelligent behavior.

In Britain and America, however, early twentieth century eugenics was also motivated by the perception of dysgenic trends within the national population. The defeats suffered by units of the British regular army at the hands of a Boer civilian army further reinforced the growing idea that Britain had lost too many of its more adventurous, dynamic and creative stock in the course of three centuries of empire-building and overseas colonizing activities. This awareness of the need to maintain the competitive quality of the British gene pool promoted a demand for eugenic policies that might increase the birthrate among those who were deemed to be its more dynamic and creative citizens. As it happened, this goal was never attained – attempts at progress in that direction were totally frustrated in World War I by the gigantic and heavily selective loss of the cream of the nation's youth on the battlefields of Flanders, in the air above the battlefields, and along the ocean supply routes on which Britain depended.

America's losses were not as heavy as those of the European nations that participated in this fratricidal conflict, but many Americans, such as David Starr Jordan, Chancellor of Stanford University,[3] recognized the severity of the genetic impact.

## The Egalitarian Onslaught

World War I benefited only one European group, the Marxists

[2] For an explanation of the extent to which misguided altruism – altruism that is directed beyond the limits of the individual's own genetic breeding pool – can threaten the evolutionary process, and with it the very survival of humanity, see Garrett Hardin, *The Limits of Altruism: An Ecologist's View of Survival* 1977, Bloomington, IN: Indiana University Press, and subsequent books by the same author.

[3] See Jordan's *War and the Breed,* published in 1915, during the second year of European participation in World War I. This clearly reveals the vastly dysgenic effect of modern warfare.



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– who in general had been careful to avoid involvement in this bloody and totally mad internecine carnage. Russian losses were so heavy amongst those who would normally have contained Marxist revolutionary violence that the Bolsheviks were able to seize control of the entire Russian empire. There, and during a similar reign of terror after a similar seizure of power in Hungary, they eliminated untold numbers of the elite, not only at the level of the ruling elite but also among the more successful of the peasantry. A genetically depleted Hungary was wrested from Marxist control, but the process of dysgenic selection continued in Soviet Russia until the eventual death of Stalin. Unfortunately, even those European countries which remained free of open Marxist rule also suffered from a vast expansion of Marxist-Lysenkovian ideology, as the ranks of the old elite who would have counterbalanced Marxist doctrines had been heavily thinned.[4] Furthermore, the economic depression that followed the ravages of World War II turned most peoples' attention to the problem of sheer economic survival, and made interest in the genetic wellbeing of future generations a luxury to which few felt inclined to devote their attention.

Unlike the altruistically-minded members of society who had readily given their lives to defend what they had so wrongly regarded as their nation's interests, most Marxists survived World War I by avoiding front line duties. With the massive winnowing of those who would normally have opposed them, they were therefore in a strong position to take advantage of the leadership vacuum that existed even in the Western countries which did not fall into their hands through violent revolution. This new generation of Marxists preached opposition to the natural law of biological competition, and blindness toward the facts of biology was acclaimed as though ignorance of such facts was a social virtue. Both Marxists and non-Marxist

[4] Ibid. Jordan details the impact of World War I on the British intelligentsia. The British universities were emptied of their younger faculty members, who died in large numbers in the mud of Flanders. Typical of the impact was the story of the elite Rugby School, which normally had a body of some 600-700 pupils at any one time. In World War I over 600 were slain, mostly youths or young men, straight from school, unmarried and childless. In short, a number equivalent to the entire school body was eliminated in just four years of one of the most bloody wars history had ever recorded.



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egalitarian activists began to attack all and any scholars who persisted in stressing the link between genetics and human ability. In America, the Nobel Prize-winning University of Texas geneticist Hermann J. Muller, who saw eugenic improvement as a means of reducing inequality by raising the level of the weaker members of society closer to that of the more gifted, resigned his membership of the U.S. Communist Party after being obliged to hastily terminate a visit to the USSR in order to avoid arrest for criticizing Lysenkovian theory – which became the only "politically correct" and legally permissible genetic doctrine under Stalinist rule. In Britain, J. B. S. Haldane also eventually resigned from the Communist Party in protest against the new biological egalitarianism which now became Marxist orthodoxy. Other legitimate scholars similarly cut their ties to the new Marxism, but this did not stop the belief in biological egalitarianism from becoming a basic tenet of those remaining Marxists who accepted Neo-Lysenkovianism and sought to use the university lecture rooms and academic media to advance their egalitarian ideology.

Political pressure can retard the progress of knowledge, but in a relatively free country it cannot suppress the search for truth altogether. In Britain and America, a few scholars retained the courage to continue their research into behavioral genetics and their findings drew passionate condemnation from the extreme egalitarians who were determined to advance the now-cherished and comfortable myth of *biological* equality – not being content with the concept of equality before the law. Even when Lysenko's theories were demolished by further advances in scholarship, biological egalitarians strove to suppress public recognition of the importance of heredity in order to prevent such knowledge from influencing social and political policies.

As has been revealed by Snyderman and Rothman in *The IQ Controversy: The Media and Public Policy* (1988), these stubborn and pedantic ideologues found willing collaborators in the media. The intimidation of "hereditarian" scientists, as the radicals liked to call behavioral scientists, became a major plank in the politics of what has more recently come to be dubbed "political correctness."

During the 1960s and '70s, this intimidation often took the form of violent Marxist-organized campus riots. The story is documented in *Race, Intelligence and Bias in Academe* (Pearson 1991), and in more



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specific detail concerning the harassment of Nobel Prize-winning William Shockley in *Shockley on Eugenics and Race* (Pearson 1992). Marxist student organizations and their sympathizers, encouraged by similar-minded faculty members, rioted on campuses, disrupted lectures, threatened faculty members, and attacked the right of scholars interested in human behavioral genetics to report their research findings or to express their opinions either on and off the campus. During the 1980s, a degree of order returned to academe, but by now many of those who had been student activists in the 1960s and '70s followed the course advocated by the Italian Marxist Antonio Gramsci (1977, 1978): that of abandoning attempts to seize control of society by violent revolution, in favor of tactics aimed at revolutionizing it from within – by the peaceful infiltration of existing institutions. Many of the far Left student activists of the 1960s and '70s consequently abandoned their schemes for open revolution and without abandoning their political ideologies became the faculty members, the university administrators, and the government bureaucrats of the late 1980s and '90s. Whereas universities such as the University of California, Berkeley, had hitherto defended the right of faculty members to express their opinions, many universities now began to yield to the pressure of the political activists now ensconced within the system, bending to the will of those who sought to restrict freedom of speech and research by faculty members interested in human behavioral genetics. "Political correctness" became a requirement at universities such as Delaware and City University of New York, which actively sought to silence scholars who uttered opinions that challenged the shibboleths of biological egalitarianism.

As the Stalinist-Lysenkoist myth of biological egalitarianism gained ground, it began to inhibit not only individual scholars but also grant-making foundations. Even foundations which had been originally established by eugenic-oriented benefactors, such as the Carnegie Institute and the Kellogg Foundation, began to eschew support for research that might favor genetic rather than exclusively environmental solutions to human problems. For a while, only a very few foundations, such as the March of Dimes, remained interested in funding scientific research into the relationship between heredity and environment in a detached and unbiased manner, free from deliberate



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attempts to deny the importance of heredity in determining the behavioral proclivities of the individual. Consequently, research into human genetics was largely limited to medical genetics, a subject to which we shall shortly return. Few grant-making foundations groups other than the small, New York based Pioneer Fund were willing to contribute to non-medical behavioral genetic research in such valuable areas as twin studies. During the dark post World War II period, the Pioneer Fund massively assisted Thomas Bouchard's ground-breaking Minnesota twin and adoption studies program, Tony Vernon's Ontario twin studies program, much of the work of Berkeley psychologist Arthur Jensen, as well as research into such topics as Linda Gottfredson's studies of the impact of heredity in the workplace.

**The Revival of Interest in Genetics**

Despite the post-Boasian malaise which continued to spread throughout the social sciences as a result of the post-World War II victory of Marxian anti-hereditarian concepts, a few outstanding scientists nevertheless continued to do key research into the critical role of heredity in shaping human personality and abilities, and even into the relationship between intelligence and the level of civilization. Typical of these was the world-renowned botanist and geneticist, C. D. Darlington, author of numerous books including *The Genetics of Man* (1964) and *The Evolution of Man and Society* (1969), who warned that selection changed the character of the world's population in every generation, and that "[t]he nation which takes most serious thought for its own genetic future is, therefore, most likely to have a future".[5] In 1968 F. Osborn argued for the increasing need for eugenics to replace the reduced role of nature in eliminating harmful genes from the human gene pool in a well-worked book entitled *The Future of Human Heredity: An Introduction to Eugenics in Modern Society*. Similarly John R. Baker, emeritus reader in cytology at Oxford University, compiled a landmark study entitled *Race* (1974). This catalogued human subspecies and populations around the world

[5] From the conclusion of his article "The Control of Evolution in Man," published in *The Eugenics Review*, Vol. 50, No. 3, October 1958.



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and throughout recorded history, and linked these to the different levels of civilization attained by humankind.

C. H. Waddington also published two significant books at this time, *The Evolution of an Evolutionist (1975)* and *The Man-Made Future* (1978), but it was E. O. Wilson's *Sociobiology: The New Synthesis* (1978) that truly created shock waves amongst the ensconced egalitarians. This was shortly followed by Berkeley psychologist Arthur R. Jensen, who more than almost any other contemporary psychologist was responsible for bringing the role of heredity to the attention of social scientists by his paper entitled "How Much Can We Boost IQ and Scholastic Achievement?" which took up virtually an entire issue of the *Harvard Educational Review* in 1985.[6] His subsequent books, notably *Genetics and Education* (1972), explained the importance of genetics in determining human intelligence in even greater detail. Another notable scholar who pressed for serious research in this area, but was howled down by the media and organized Marxist groups on campuses wherever he sought to lecture, was the Nobel Prize-winning physicist and co-inventor of the transistor, William B. Shockley, many of whose writings on the subject have been reproduced in the book *Shockley on Eugenics and Race* (Pearson, 1992).[7]

Major public attention was also drawn to the subject of human heredity by Richard J. Herrnstein of Harvard University, with his now-famous *Atlantic Monthly* article (1971) and his book *IQ in the Meritocracy* (1973), on the heritability of intelligence and its increasingly critical role in today's complex civilization. He explained that, as intelligence is largely hereditary, an inborn lack of ability would bar certain individuals from career success, and that, as technology advanced, "biological stratification" would become increasingly obvious. More recently Herrnstein co-authored with Charles Murray of the American Enterprise Institute *The Bell Curve: Intelligence and Class Structure in American Life* (1994), which was completed shortly before his death from cancer in September 1994.

[6] HER Vol 39 (1): pp. 1-123.

[7] Roger Pearson, *Shockley on Eugenics and Race*, 1993, Scott-Townsend Publishers, Box 34070, NW Washington DC 20043. Introduction by Arthur R. Jensen.



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This has had an even greater impact on the public and scholastic world alike – despite an organized and devastatingly adverse media reaction by committed egalitarians who saw their moral base crumbling beneath them. The two authors warned that today's massive social problems cannot be solved without recognizing the role of heredity in determining the limits of human behavior, including its impact on social issues such as crime, illegitimacy, welfare dependence, productivity, and social stratification. Differential birthrates, they pointed out, impact on national intelligence, and the failure of school integration and other experiments intended to raise group educational performance despite massive governmental expenditures can only be understood in light of the essentially hereditary basis of human abilities. Although American academe has lost a powerful voice with the passing of Herrnstein, other writers and scholars, particularly those associated with medical research, are now turning more and more to genetic research to explain behavioral problems that refuse to yield to environmental solutions.[8] Some of this work has been summarized in *Race, Evolution and Behavior: A Life History Perspective* by the noted Guggenheim scholar, J. Philippe Rushton.[9]

These and other scientists have since produced a wealth of evidence demonstrating beyond reasonable doubt the gross absurdity of biological egalitarianism, and shown how many environmentally-based social programs could have seriously dysgenic implications. The even more dramatic possibility is that with the present demographic international trends the percentage of the intellectually well-endowed members of the total world population is likely to undergo a dramatic

[8] Lay writers also are beginning to explore these subjects and make them understandable to the general public. Daniel Seligman, senior editor of *Fortune,* has published a highly readable book called *A Question of Intelligence* (1992) covering what scientists know and do not know about intelligence and why intelligence is so important to human beings. Although Seligman is not a scientist, the book received very positive reviews by scientists Ernest van den Haag, James Q. Wilson (1993), and Richard J. Herrnstein (1992). Writer Peter Brimelow (1993, 86) of *Forbes* magazine said that Seligman "defies one of the most powerful contemporary taboos" by reporting the importance of intelligence and its heritability. Scholar Charles Murray (1992, 63) stated that the Seligman book reveals "labyrinthine ramifications for our culture and our polity."

[9] New Brunswick: Transactions, 1995.



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decline relative to those who are less-well endowed in this respect.

**Twin Studies Reveal the Role of Heredity in Shaping Human Personality**

In the field of psychology, twin studies in particular have produced a collation of data which demolishes the fanciful theories of the proponents of biological egalitarianism, providing objective and quantitatively measurable evidence substantiating the importance of heredity in determining human behavioral potential. The Minnesota Twin Studies project has shown that the evidence supporting the existence of genetic influences upon human cognitive abilities, as well as on general aspects of personality, is overwhelming. As one of the researchers, Nancy Segal, has reported, the degree of similarity between twins reared apart in different environments is much greater than between fraternal twins raised in the same family. The results of personality tests also reveal striking similarities in cases such as that of the personality profiles of a set of identical twins, one of whom had been raised in Trinidad by a Jewish father and the other in Germany by a Catholic mother. Medical life histories also provide extremely powerful evidence of the importance of genetic influences on behavior. Brain patterns show a higher degree of similarity between identical twins reared apart than between fraternal twins reared apart, and medical and even dental case histories show a close parallel even where identical twins have been reared under quite separate circumstances.[10]

Thus, identical twins separated by adoption after birth and reared in disparate environments reveal strong similarities which environmentalists cannot explain away. In fact, the similarity in personality and intellectual ability of identical twins reared apart is little different from the similarity shown by identical twins reared together.[11] These traits include not only shared psychological and vocational interests, but even psychological proclivities such as

[10] See Nancy Segal, "The Nature vs. Nurture Laboratory" in *Research*, July/August 1984.

[11] See amongst other literature "Personality Similarity in Twins Reared Apart and Together," By A. Tellegin, D.T. Lykken, T.J. Bouchard, K.J. Wilcox, N.L Segal and S. Rich, in *The Journal of Personality and Social Psychology*, Vol. 54, No 6 (1988).



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conservatism, sociability, self-control, flexibility and religiosity as measured by academically accepted standards of assessment. This suggests that the members of distinct breeding populations (i.e. gene pools) must be expected to inherit diverse proclivities for different kinds of cultural behavior, and that patterns of life style and even the character of developed civilizations might well be shaped by inherited personality biases in addition to the obvious limitations imposed by disparate levels of intelligence.[12] As a result, committed egalitarians such as Leon Kamin strive to denigrate the findings of twin research such as that conducted at the University of Minnesota by suggesting that twins reared apart might "have particularly strong motives to downplay previous contacts and to exaggerate similarities."[13] One suspects that these critics are pushing their arguments beyond the limits of their own logic, and that they know in their own minds that such twins could hardly fabricate similar brain waves, blood pressure, heart rate, cardiovascular functioning, pulmonary functioning, electrodermal response amplitude, occurrence of dental cavities, and reaction time to various novel tasks – and that such physiological similarities as these could not be modified by occasional or even frequent meetings, had these in fact taken place.

**Blood Groups and DNA**

The days when pro-egalitarian propagandists, totally disregarding what was known even in their time, could persuasively argue that individual and group differences were "only skin deep" are gone forever. The days when it was claimed that the technique of blood transfusions, first widely practiced in World War I, demonstrated the

[12] There is a mountain of literature dealing with twin studies, but a synopsis of the racial implications may be found in "Comment on the Minnesota Transracial Adoption Study" by Michael Levin, published in *Intelligence,* Vol 19, 13-20 (1994).

[13] An objection that the similarities between twins might be due to contact between twins prior to testing was raised by the dedicated biological egalitarianist T. J. Rose, in respect of a sample of Finnish twins, but this possibility has been fully considered by T. J. Bouchard and Matthew McGue (1990). One leading scholar engaged in twin research has observed that the determined effort of Lewontin, Rose and Kamin to demonstrate that individual human differences are not significantly influenced by genetic factors leads one to believe that their writing reflects their ideology and that findings in support of significant genetic influences would be threatening to their world view.



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egalitarian unity of all members of the human race are also gone, for it is now known that while some of the major blood groups are shared by all races, they are also shared with primates and various other mammals. During World War II great emphasis was laid by egalitarian propagandists upon the fact that the A, B, AB and O blood groups (so essential for successful blood transfusion) could be found among all human races, without realizing that these basic blood group categories were shared by virtually all human populations, but were also shared with other primate and mammalian species. Indeed, the vast majority of human nucleotide bases, out of an estimated total of some three billion, are shared with other non-human life forms: it has been estimated that of these three billion only between two to ten million differ from person to person. According to one estimation of genetic relationship, human DNA differs from Chimpanzee DNA by no more than 1.6 per cent overall. It is time that we stopped promoting the specious concept of the uniformity of humankind, and on the one hand recognized the unity of humankind with the primates and all other living organisms, while on the other hand appreciating the immense significance of what have hitherto been regarded as relatively small differences between human individuals and human breeding populations.

As John H. Beckstrom commented in 1993:

> All humans alive today share, in common, the vast majority of their genes. But over and above those genes that prevail in the entire species, additional gene commonality exists between close relatives because they received their genes from close ancestors whom they have in common ... 'familial' genes." (Beckstrom 1993, p.15)

Thus, with respect to blood groups it is now common knowledge that not only does the frequency of distribution of blood groups vary from one population to another, but that many populations, especially genetically isolated populations such as certain South American Indian and Central African tribes, Lapps and Inuit, reveal rare blood group polymorphisms which are unique to their own populations, distinguished as these populations are by different evolutionary histories. Such distinctive genotypes are to be expected among groups



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separated by long periods of genetic evolution.

Numerous human microraces or breeding populations possess blood groups which are unique to their members. That it was possible to classify races by blood groups was early revealed by William C. Boyd in his *Blood Group and the Races of Man: An Introduction to Modern Physical Anthropology* (Boston, Little Brown. 1950), by A. E. Mourant in his *The Distribution of Human Blood Groups* (Oxford, Blackwells, 1954), and confirmed by a host of later researchers. Mourant's work showed that contrary to popular biological propaganda, some blood groups were unique to particular populations. Since then the courts of law have come to accept genetic evidence when faced with legal disputes regarding paternity; and it is now widely recognized that marked variations in the frequency of specific blood groups distinguish genetically separate human populations from each other. Furthermore, these patterns carry within them a coded guide to the racial history of each breeding population.

**DNA Profiling**

In particular, the ability to analyze and classify human DNA has advanced rapidly in recent years, and DNA testing is supplementing if not supplanting blood group analysis for forensic purposes. An individual's DNA is as unique as his fingerprints, but also indicates with which other people he has close genetic kinship or racial links. A single hair, a sliver of skin, even a dandruff flake can often reveal an individual's genetic identity. Some artists are reportedly incorporating a sample of their DNA into the signatures on their paintings to authenticate these and to facilitate the detection of forgeries. In this age of unprecedented population growth,[14] and the

[14] World population is currently increasing at the rate of some 97 million annually, and even assuming that the rate of increase will decline, it is estimated to reach 10 billion by the year 2050. The population of China, where strict attempts are being made to limit population growth, is currently 1.25 billion, but even assuming that government efforts to restrict population growth continue, the Worldwatch Institute projects a Chinese population of 1.66 billion by the year 2045. Women in Africa have for some decades been averaging six live births per female, whereas in areas like northern Italy and east Germany the birthrate is far below replacement level. Whereas the population of Bangladesh (formerly East Pakistan) was around 40 million when the area was first separated from India only 48 years ago, it is today more than 125 million. Needless to say, Bangladesh supports this



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resultant invasion of national breeding grounds by the surplus population from alien stocks, illegal immigration could be more readily controlled through the issue of identity cards impregnated with small portions of the carrier's own unique DNA. This would establish a forgery proof method of identification, as well as provide a key to the phylogenetic of the individual.

DNA profiling has already begun to be used to assist historians in determining the racial history of populations by revealing their genetic components. Going well beyond the early studies of A. E. Mourant,[15] several scholars have worked to throw further light on the demographic history of the Jewish diaspora, utilizing blood group patterns, genetic polymorphisms and DNA profiles to determine the extent to which the different Jewish communities have interbred with the diverse local populations amongst which they had resided at different times over the centuries.

Even more recently, L. L. Cavalli-Sforza (1988, 1993), with co-authors Paolo Menozzi and Alberto Piazzi, has embarked in *The History and Geography of Human Genes* (1994) on a pioneer odyssey into the historical and genetic relationships that demarcate living populations of humankind throughout the world. Although based on a mere 120 alleles drawn from only 42 living populations, this study points the way to further research which in time could untangle the complex web of historic migration and genetic admixture with a degree of precision which would have been impossible with the more primitive techniques known to physical anthropologists just fifty years ago. Summarizing the worldwide data in a singular 42 by 41 matrix illustrating genetic distance, Cavalli-Sforza and his co-authors find that the English differ from the Danes, Germans and French by a

population increase only as a result of massive aid from the countries of the Western world, whose share of the world's population is annually declining. The population of India increases every five or six days by the total population of Europe's oldest democracy, Iceland. The changing character of the human population is also reflected in disparities in the birthrate between the more successful members of industrialized countries and the less successful, who worldwide tend to produce more offspring. The population of native Europeans is actually declining, and it is anticipated that Europeans will eventually be largely replaced by increasingly massive immigration from Africa, Asia and the Far East.

[15] See his publication, *The Blood Groups of Jews,* 1959



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mere 21-25 measures of genetic distance, whereas they differ from North American Indians by 947 points, from the African Bantu by 2288 and from Mbuti Pygmies by 2373. An erstwhile dedicated environmentalist, Cavelli-Sforza, genuflects in a few mandatory paragraphs to the crusade against "racism," but concludes that the collected data show that "North Eurasians," – a term he uses to group Europeans, Mongols, Japanese, Koreans, and Northern Chinese – are more closely related to each other than to Africans and Australoids.[16] In short, their findings as to the degree of similarity and difference between surviving populations of *Homo sapiens* are essentially parallel to those of the older-school physical anthropologists represented by Carleton Coon.[17]

Interestingly, this latest Cavelli-Sforza study supports the findings

[16] In their determination to ignore the traditional anthropometric terms which classify living populations along racial lines, Cavelli-Sforza and his co-authors have chosen to use purely geographical or national terminology, which actually has little to do with genetic realities in many parts of the modern world. Yet even though they are working with non-racial genetic markers which were chosen because they had no known evolutionary implications, the racial patterns that are revealed coincide very closely to the conclusion of traditional anthropologists. The argument about whether or not "races" exist has become purely a matter of semantics – of what exactly the debaters understand by the term "race." Distinct gene pools and breeding populations have existed since soon after sexual reproduction first evolved; otherwise, there could have been no speciation and no evolution. If we accept the term "race" in its original sense, as referring to any group of people of essentially common ancestry, who as a result of mutation, genetic drift or evolutionary selection have come to share, to a recognizable extent, certain distinctive genetic patterns, the term presents no scientific difficulties whatsoever.

[17] Where contemporary DNA and mitochondrial DNA theorists primarily differ from Coon and more traditional physical anthropologists is in assessing the antiquity of the race differences which distinguish the living populations of *Homo sapiens*. Coon and many paleontologists believe that surviving skeletal evidence indicates that some of the present-day racial characteristics, such as the Mongolian shovel-shaped incisor, were already present in pre-sapiens populations in that area and indicate either separate regional evolution of contemporary populations from pre-sapiens ancestors or at least significant interbreeding of expanding *Homo sapiens* populations with local pre-sapiens populations. Mitochondrial DNA enthusiasts in particular insist that early *Homo sapiens* populations maintained total racial separation, and did not crossbreed with females belonging to other subspecies of *Homo* when expropriating the territories of the latter. This raises the old dispute about evolutionary history of the Neanderthals (today regarded as *sapiens* because their distinguishing skeletal characteristics can be matched among various extant living populations) and their subsequent displacement by Cro-Magnons.



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of mitochondrial DNA research, which implies that at one time the ancestors of all living hominids originated in Africa, and that the major racial differences arose as a result of an early migration of certain hominid groups out of Africa. These were subjected to subsequent rapid evolution in colder more northerly zones, while those that remained in Africa were not affected by the selective forces associated with the harsher new environment. This is illustrated by the evidence of DNA which reveals a primary divide between the contemporary sub-Saharan populations, whose ancestors remained in Africa, and those that evolved their present genetic characteristics in Eurasia, under different and presumably more challenging environments.

**The Human Genome Project**

The growing appreciation of the role of genetic forces in determining human qualities has consequently led in recent years to the establishment of numerous human genome research projects.[18] Despite the hangover of anti-biological environmentalism still found in the social sciences, this project is focusing the attention of the more perceptive scientists on the reality of human biology. Breakthroughs in molecular biology have made possible the construction of a human genome map, consisting of a schematic representation of each chromosome, showing the bands and the approximate location of each of thousands of genes. Work is advancing continuously in several different countries on the construction of genetic linkage maps, with special attention to those responsible for human defects, tracing the loci assignable to specific human chromosomes. Already, a database comprising over 6,000 loci, including anonymous DNA segments, has been constructed by those engaged on the U.S. project, with work also progressing in Britain and other countries. This has been vastly facilitated by computers, for the development of which science owes an eternal debt to that much-maligned genius, William Shockley, who headed the small three-man

[18] The application of genetic engineering to agricultural and other industrial uses is also encouraging the scientific world to appreciate the opportunity that is rapidly developing for humankind to plot its own destiny.



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team which made a breakthrough in developing the transistor and who, ironically, was castigated for urging the need to research the genetic basis of human personality in order to enable humankind to guard against dysgenic decay.

While the human genome project already points to new strategies to diagnose, treat and prevent human diseases, and may be expected to become the basis of extensive medical benefits for posterity, its utility in revealing human ancestry should not be overlooked.

The genome project has two major implications: firstly the potential for promoting eugenic remedies by pointing to the genetic predisposition to disease as distinct from the actual occurrence of disease; and secondly, the light that it promises to throw on the nature and extent of human racial diversity. As Marc A. Lappé has said,

> The products of the genome project may throw into stark relief the paradox of a society based on the premise of equal standing at creation and one that is found to be composed of a genetically heterogeneous group of subpopulations with quantitatively different frequencies of heritable traits. As a society, we will have to ask if we can in fact collect information that reveals these individual differences and still continue to treat all individuals the same....
>
> What is clear is that even a partial picture of the genetic landscape that defines the molecular differences among human individuals will reveal more its nonuniformity than its hoped for universality.[19]

Human racial history is being clarified: as new gene sequences are revealed by the genome project it is possible to cross-relate them with detailed maps of other genetic loci in the genome. This increasingly facilitates a more complete picture of gene action and the analysis of polygenic traits, which are so important to any true picture of the character of distinctive human breeding populations. As the

[19] "Justice and the Limitations of Genetic Knowledge," Marc A. Lappé, in *Justice and the Human Genome Project*, editors T.F. Murphy and Marc A. Lappé, California University Press, Berkeley, 1994.



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history of genes is traced, the genetic profile of different breeding populations is becoming much sharper.[20]

The human genome project helps to remind us that we are, after all, biological organisms just like other animals, and even plants. It should make us realize that we need to bring ethics into line with biological reality, into line with the reality of evolution and the universe. It is essential that human culture and human ethics should be in line with the realities of the universe, and those realities include our own human biological nature. It should also serve to remind us that racial or genetic differences are real and important, and that the culture on which we rely for survival itself depends on biology and hence on our genetic heritage. The uniqueness of each individual's genetic makeup is thus today well-established. DNA fingerprinting is so distinctive that the likelihood that an individual member of even that widely heterogeneous group contained within what we call the Caucasoid race may have the same DNA imprint as another is something in the region of one in a hundred million, and between individuals of different races this possibility becomes virtually zero. However, to date less publicity has been given to the significance of the fact of group differences in the frequency of major genetic loci.

Contrary to previous egalitarian supposition and propagandizing, significant genetic differences distinguish historically isolated populations or gene pools. A prime question for the future is the extent to which historically separate populations, some of which have evolved further in certain directions than others, will be able to preserve their distinct genetic characteristics in an increasingly overcrowded and mobile world. Evolution was able to proceed amongst hominids, as amongst other life forms, as a result of genetic isolation, which was initially facilitated by geographic isolation. Only after geographic isolation had created a wide variety of subspecies and quasi-subspecies possessing markedly different genotypes did subspecific or "race" prejudice – what C. G. Simpson (1971, 1980) describes as a psychological restraint on cross-breeding – come into

[20] However, in the countries of the Western world the distinctness of evolutionary separate populations is becoming more blurred with every generation, as a result of out-breeding. This is not happening so rapidly in other parts of the world.



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being as an evolutionary mechanism serving to preserve subspecific identity amongst increasingly mobile species.[21] The co-habitation of individuals of diverse genetic origin in the same geographical location, and the probable further decline of "race prejudice," may reverse the prehistoric evolutionary trend toward subspeciation and initiate a reversal of nature's evolutionary tactics. William Shockley, whom we mentioned earlier, was deeply concerned with the possibility that indiscriminate mating could result in dysgenic trends which would effectively usher in a period of human "devolution."

**Opposition to the Human Genome Project**

Biological egalitarians are fearful that the knowledge acquired as a result of the human genome project will destroy the plausibility of their universalist ideology. They are particularly concerned about the revival of scientific interest in group differences which will unavoidably result from the construction of 'demic maps' tracing the genetics of regional populations of different evolutionary ancestry – since these will reveal the true extent of group differences in genetic potential. Such maps will trace the varied genetic heritage of human demes (breeding populations or micro-races) with scientific precision; and by throwing a sharp and revealing light on what had hitherto been a debatable area of human knowledge will explode the anti-evolutionary myth of universal biological uniformity.

Such people apparently regard equality before the law as an inadequate basis for societal justice, and are prepared to condemn limitless numbers of future generations to the evils of ignorance and genetic disease in order to protect the egos of those who are alive today. Egalitarian activists such as Barbara Faye Waxman have

[21] Simpson points out that without some mechanism to discourage interbreeding (what we call "race prejudice") no subspeciation could have occurred among more advanced species whose mobility rendered geographical barriers inadequate to sustain evolutionary speciation. Since speciation is one of the major factors in evolutionary advancement, some kind of psychological barriers had to develop to prevent new experimental species from being eliminated at the subspecific stage by re-merging their specific collation of genes with that of other subspecies. In the absence of biological or culturally inspired prejudices, "miscegenation" would eliminate new subspecies before they had had time to become so genetically differentiated from each other that they had lost the biological ability to interbreed.



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*complained* that the human genome project will foster a revival of negative eugenics. They appear to be unconcerned about the fate of future generations and – either consciously or unconsciously – willing to doom untold billions to genetically-dictated misery to satisfy their own biologically unreal concept of morality.

It was therefore not surprising that, when in 1988 the European Commission proposed the establishment of a human genome project to aid predictive medicine, an anti-eugenic coalition immediately sprang into existence and succeeded in inducing the European Parliament to establish a committee to report on the proposal.

The rapporteur appointed for the committee was a certain Benedikt Härlin – a member of the Green Party, which has strongly opposed genetic research and the genome project. The Härlin report consequently recommended that tight restrictions be imposed on scientific research into human genetics, seemingly preferring to live in an age of darkness. The Green Party, for all its laudable claims to protect the non-human environment, turns a blind eye upon the ongoing destruction of the human genetic heritage, arguing that the prime responsibility of the European Parliament is to block any eugenic trends that might result from human genome research. The ultimate result was that the project was severely emasculated, narrowing the opportunities of securing information helpful to predictive medicine, prohibiting both human germ line research and eugenic intervention – with a portion of the approved money being diverted to fund "ethical issues arising from genome research." Cynics might well see this latter as a carrot offered to scientific Luddites.

**Genetics and Modern Medical Practice**

Progress in genetic science is also transforming medical science by facilitating new opportunities for the remedial treatment of genetic defects, and by offering the possibility of reducing human suffering by identifying fetuses suffering from severe incurable defects at the prenatal stage. Medical geneticists have identified the genetic roots of numerous illnesses, and family medical history records are now increasingly important in assisting the medical fraternity to determine appropriate courses of treatment. Such records have usually been poorly kept, however, and the knowledge that can be gained therefrom is far from definitive as an indicator of genetic defects or



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weaknesses in individual offspring. Eugenic decisions are far more precise when the phenotype of the infant can be examined by means of techniques such as ultrasound sonar examination. By this process an ultrasound transducer is placed on the mother's abdomen and sound waves travelling through the amniotic sac will reveal the size and shape of the fetus within the womb. In addition, laparoscopy has been developed, which involves the use of a flexible fiberscoptic rod, inserted through the abdomen, which in addition to permitting an examination of the abdominal cavity and fallopian tubes, makes it possible to obtain blood samples from the fetus which can then be analyzed for evidence of genetically determined diseases.

Another technique utilized today in promoting practical eugenic treatment is amniocentesis. This involves the extraction of a small quantity of amniotic fluid, which carries in it cells shed by the fetus, and these reveal the genetic make-up of the fetus. Already, some genetic defects can be cured, while others may be deemed sufficiently serious to indicate the desirability of terminating the pregnancy.[22]

However, for those concerned with the transmission of a healthy gene pool to future generations, we must not forget that there are two sides to advances in medicine: improved medical skills that help the individual to overcome genetic handicaps are commended by all, but at the same time they often heighten the chances that the genetic problems responsible for the condition will be passed on to future generations. Medical science does not benefit mankind when it has

[22] *The Washington Post,* September 17, 1995 (p. A3), carries a story entitled "After Years of Birth Defects, Pain and Mystery Linger in Brownsville." Author Sue Anne Pressley reports on the high rate of neurological birth defects in Brownsville, Texas, believed to be caused by air pollution from dirty factories in the neighboring Mexican town of Matamoros (where *maquiladoras* and other Mexican industry is promoted by trade agreements which enable Mexican industries to benefit because of the absence of pollution controls corresponding to those which govern U.S. industrial competitors). The article reports that among the many serious birth defects recorded in Brownsville between 1986 and 1991, 47 involved babies born without brains. The ability to detect this condition in fetuses now facilitates eugenic abortions, which spare the parents and the community much emotional and economic hardship. While the genetic defects responsible for anencephalic births are hardly likely to be passed on to future generations, many other defects of a less crippling but almost equally disastrous effect often do enter the gene pool of a population and increase the genetic load of hereditary defects which will be passed on to future generations.



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dysgenic impact – when it defeats nature's normal tendency to reduce the likelihood of harmful genes being transmitted in perpetuity to future generations or when it assists organisms which are genetic "basket cases" to evade nature's sifting mechanism and to pass on their collation of inferior or deleterious genes as a curse laid on future generations.

However, many who inherit the finest collection of genes are also cursed by a genotype that includes one or more dysfunctional genes. Clearly, modern medicine increases the likelihood that harmful genes will be transmitted to future generations; and the permeation of our society with such genes is now so advanced that it is imperative that geneticists should be encouraged – not discouraged – to search for techniques which will make it possible to substitute healthy genes for faulty genes. There is no reason why it should not soon be possible to substitute healthy genes for many dysfunctional genes.

**The Enhanced Potential for Positive Eugenics**

Both eugenic approaches, "negative" (the reduction of harmful genes in the gene pool) and "positive" (an increase in the percentage of "healthy" genes in the gene pool), are currently being greatly facilitated by modern science, and an increasing number of medical personnel are already making eugenic choices in the conduct of their duties. When eugenics first became popular, genetic knowledge was too limited to facilitate negative eugenics in any but the most crude manner, and much was done that was tragic, and sometimes repulsive. Without getting into the history of legally enforced sterilization, there were also many instances where individuals of superior genetic quality were persuaded not to have offspring where there was reason to believe that a solitary defective gene had revealed itself in the phenotype of a family member. Today there is an increasing ability to detect genetic defects in foetuses, and the future holds the possibility of "genetic surgery" to replace deleterious genes with healthy genes, thus making it possible to free future generations from certain specific weaknesses in a discriminating fashion. Thus competent individuals whose genotype is cursed by only simple genetic problems may in future be able to contribute their superior genes to posterity without fear of transmitting genetic defects which are identifiable and subject to manipulation by such techniques. We



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can now look forward to the days when the breeding of reliably more healthy and competent stock can be promoted by ethically sound medical intervention.

As another example of what can be done, *in vitro* fertilization has already become common practice in Western countries when married couples who wish to have children are prevented from doing so by the infertility of one of the prospective parents. Such situations offer a perfectly moral opportunity to influence the course of human evolution in a rational and eugenic manner, by ensuring that the couple should have available to them a choice of germinal donors of healthy and genetically sound stock. It was Hermann J. Muller who first widely publicized the idea of establishing repositories for germinal plasma as a means of maintaining eugenic quality; and it was Dr. Robert K. Graham (an ophthalmologist who aided mankind by developing the scratch-resistant plastic lens) who converted Muller's idea into a reality. Aided by an advisory panel of medical specialists and geneticists, Graham established the Repository of Germinal Choice in Escondido, California, in 1980. Here, would-be parents can obtain germinal plasma of high quality and be advised of the physical and mental qualities of a donor's family background (without, of course, being informed of the donor's name). Up to the time of writing, the Repository has already been responsible for the birth of several hundred bright, lively, and healthy infants.[23]

**Critique of the Neo-Lysenkovian Opposition to Eugenics**

The morality of this technique does not prevent those whom Bernard Davis dubbed "scientific Luddites" – because they sought to restrict research into behavioral genetics – from continuing to condemn even the mildest of voluntary eugenic programs such as this, seeking to ridicule such programs at every opportunity.[24] Such

[23] An account of the Repository has been provided by Jamieson in an article published in *The Mankind Quarterly* under the title "Concerning Scholarly Creativity: Hermann J. Muller and Germinal Repositories" (Jamieson, 1993).

[24] Davis likened the opponents of genetic research to the Luddite rioters of eighteenth century England, who sought to stop the industrial revolution by breaking newly installed machinery. Scientific Luddites oppose the search for knowledge even though it could free future generations from the dysgenic impact resulting from the faulty social policies of



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opponents of eugenics prefer to overlook the words of the young woman who was tested and found to be free of the gene for Huntington's disease, who stated that:

> After 28 years of not knowing, it's like being released from prison. To have a hope for the future ... to be able to see my grandchildren. (Jerry E. Bishop and Michael Waldholz, 1990, p. 274).

Unfortunately, while knowledge can help us to perceive the human condition more clearly and to evaluate the results of our behavior, human beings unfortunately do not always act rationally. As J. Murphy observes (1982, p. 100), the ends that individuals accept as ultimate goals "are given by the passions and, at this level, reason is the slave of the passions." Only a passion that takes into consideration the welfare of those yet to be born is justifiable in moral terms. It is the welfare of the entire phylogenetic continuum, not the of the individual alone, that should shape our passions and our morality.

Apart from the obvious outward physical differences which distinguish the diverse human breeding populations, behavioral tendencies which have major importance for determining the viability of civilization and for the better scientific understanding of the universe also seem to have a predominantly genetic basis. We do not here refer solely to intelligence, of enormous significance as all must surely concede that quality to be. The ability to direct one's actions toward achieving long-term goals, rather than to yield to the siren call of instant gratification, is another of the many qualities that are of supreme importance to modern man. General physical health and the propensity for properly directed altruistic behavior are other desirable qualities which also have strong genetic roots. On the other hand, specific diseases, sociopathic behavior and many forms of mental illness similarly have a genetic basis, and call for the attention of eugenicists. The genetic basis of such behavioral traits is likely to be

today. They do not realize that policies rooted in ignorance are far more dangerous for the future of mankind than policies based on factual knowledge.



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complex or polygenic, but the study of animal models as well as of human twins has shown that all biological characteristics have a genetic basis, and that the environment can only work on the material provided by heredity, occasionally modified by mutation.

The argument against eugenics is based on the clearly erroneous assumption that genes are spread evenly throughout human populations, or in more extremes cases, on the idea that no one gene is more desirable than another. Such views would imply a degree of genetic panmixia which could not have existed in evolutionary time; otherwise evolution could not have occurred. It has been said that when a species is reduced to a single subspecies (e.g. panmixia), it is nearing extinction. Long-term evolutionary survival is by way of speciation and this necessarily involves subspeciation. Evolution cannot occur unless "favorable" genes are segregated out from amongst "unfavorable" genetic formulae. The entire history of evolution from biological simplicity to biological complexity and from biological uniformity to biological diversity involves genetic segregation just as it involves genetic selection. Furthermore, human behavior is shaped by environmental forces operating on the genetically determined potential, and we should remember that even *the capacity to learn* from accumulated culture is genetically influenced.[25]

Examples of legislation that has been successfully introduced to suppress the utilization of genetic science can be found in many states. In some states, such as Wisconsin and Iowa, genetic screening as a basis of employment is illegal [Iowa Code Ann. 729-6 (West 1992), Wisconsin Statutes 111.372 (1991-1992)]; while a Louisiana Statute (La. Rev. Stat. #9: 122) rules that "a viable *in vitro* fertilized human ovum is a juridical person which shall not be intentionally destroyed."[26]

It is entirely true that the opportunity to interfere with nature – in the wilful selection by parents, for example, of the sex of their

[25] See Beckstrom, 1993, p. 14.

[26] Interestingly, the legislators did not prohibit the freezing of such embryos, which in effect renders them non-viable.



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offspring – could lead to serious social problems if foolishly applied; but on the whole, knowledge must be deemed always to be desirable, and the search for knowledge about human heredity should not be suppressed or discouraged at the whim of the scientific Luddites. How humankind chooses to use this knowledge is a sociological and philosophical problem, not an argument for suppressing knowledge. We are on the verge of a new phase in the history of genetics, one which has major implications for the possible future of mankind – provided political forces do not prevent the utilization of this knowledge and that contemporary dysgenic processes do not deprive future generations of an adequate proportion of those very genes which make that possibility a reality.

**Concluding Remarks**

The genome project is clearly exposing the fallacious assumptions on which the egalitarian cult is based. The idea that the individuals that comprise any society – particularly a multi-racial society, which by definition will be genetically more heterogeneous than one comprising individuals who share a common ancestral heritage – could be of uniform biological potential is exposed as a fabrication, a logical absurdity. Equality before the law remains a realistic social goal, but equality of ability can never be a biological reality, except between identical twins. Some individuals – especially in a more heterogeneous society – will possess genetically determined mental and physical qualities which will enable them to be more creative, more productive, or physically more healthy than others, even when the cultural or environmental playing field is level. If that were not the case, there could have been no possibility of evolution. The belief that humankind could benefit from being levelled into a single subspecies also flouts the laws of evolution, since evolution is rooted in differentiation.

The need for eugenic intervention is today increasingly urgent due to the fact that human culture and human technology have blunted nature's biological pruning knife. At all times a degree of genetic selection is necessary if any breeding population, subspecies or even species is to survive, since mutations (mostly harmful) occur continuously. Medical intervention is unquestioningly humane when it assists those born with genetic handicaps to cope with them, or



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those who suffer from accidental handicaps to survive; but eugenic goals make it highly desirable that research aimed at advanced techniques of "genetic surgery" be developed to enable the substitution of healthy genes for deleterious genes. Too many individuals in contemporary society, of high genetic potential, now carry one or two undesirable genes to permit us to argue, as the early eugenicists did, that anyone with a known genetic defect should simply not reproduce. Yet research aimed at techniques for replacing faulty genes with healthy ones is the one area of study which anti-eugenicists most stringently oppose.

To foretell the future of eugenics, the question we must ask is: how will human societies react once the full truth about individual and group genetic ability becomes known? It is arguable that whatever happens will be the result of causal forces, not of "free will," since there is no reason even to hypothecate the existence of non-causal forces in human decision-making, and competing "ethical" concepts are probably as causally determined as any other aspect of the real world. Unfortunately, nowhere is it written that a society's ethical views or any other aspect of its cultural baggage should have eugenic value. Only in the long term can we say that dysfunctional ethico-cultural systems are doomed to extinction, simply because if they persist they will doom the biological communities which are guided by them. There is only one law in the universe: that which does not survive ceases to exist. Consequently, an ethic which has dysgenic implications will eventually eliminate the society which adheres to it. While altruism evolved as an evolutionary device that promoted the survival of the distinctive gene pool which gave rise to it, any population that adopts a perverted or dysgenic form of altruism – one which encourages a breeding community to breed disproportionately those of its members who are genetically handicapped rather than from those who are genetically favored, or which aids rival breeding populations to expand while restricting its own birth rate – is unlikely to survive into the indefinite future.

Once science can determine which individuals and populations have disproportionately high gene frequencies for advantageous traits, and which are handicapped by deleterious genetic qualities, societies which are prompted by a higher altruism dedicated to the wellbeing of future generations, rather to the sole gratification of the selfish



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needs of those who are currently living, will be able to effectively select eugenic over dysgenic reproduction. If true altruism prevails, the result will be eugenic decisions, made voluntarily and without coercion. By contrast, if the ethical level is low (a categorization in which I would include dysfunctional ethical systems, however ardently such devout but unrealistic value systems are held by the individual), or the altruistic drive is distorted into unnatural directions, then the choices made are likely to be dysgenic.

Timothy H. Goldsmith, the Andrew W. Mellon Professor of Biology at Yale University, has stated that "[T]he concept of morality's producing the greatest good for the greatest number is consistent only when the interests of the individuals are very similar. This has probably frequently been the case with small homogeneous groups in competition with other groups; it is less obviously so when groups are large and heterogeneous."[27] He correctly surmises that evolution normally involves inter-species competition. However, even in the unnatural, highly heterogeneous human communities that are emerging today, the principle of "the greatest good for the greatest number" is still valid if we raise our horizons from the selfish horizons of our own generation to consider the wellbeing of that much vaster number of future generations of humanity yet to be born. It is *their* wellbeing that should concern us, not just the wellbeing of those with whom we share this crowded planet at the present time.

Forced, state-imposed eugenic systems are wisely feared by many well-intentioned people for good reason: human governmental bureaucracies seldom achieve the virtue anticipated by high-minded philosophers such as Plato, and tend too often to foster corruption and to permit unworthy individuals to seize positions of power and influence. Indeed, the leadership of most if not all nations, intellectual as well as political, appears to have currently fallen into the hands of individuals and pressure groups which promote dysgenic policies that match, in their impact upon humanity, the overall destruction of the ecosphere which is currently taking place around the world, and which few governments or interest groups seem

[27] *The Biological Roots of Human Nature: Forging Links between Evolution and Behavior.* Timothy H. Goldsmith, p. 123. Oxford University Press, New York, 1991.



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capable of preventing. Possibly the best that we can hope for is that an intelligent and informed populace, freed from the distorted myth of biological egalitarianism and any belief in the near-divinity of humankind as either the "apple of God's eye" or the supreme lord of the universe who can do no wrong, may exert a realistic and humane influence on public policy as to the critical problems today facing humanity.

J. Stan Rowe, in a final chapter to *Planet Under Stress: The Challenge of Global Change* (Editors, Constance Mungall and Digby J. McLaren, p.332) writes that if people are regarded as being the central reality of the universe

> then the sole focus of ethical concerns will be *their* rights and values ... but if things other than humans are of surpassing importance, as today's events lead many of us to suspect, then a new purpose – Salvation of this Planet – is revealed ... [science] has inadvertently opened a new chapter in the book of knowledge whose dazzling insights can change fundamental ideas about the planet/people relationship, about values, and about the way we know the world.

While the present writer shares the same concerns as Rowe, logic should make it perfectly clear to even the most anthropocentric of philosophers that the fate of mankind as a species requires that we recognize the evolutionary realities that govern the workings of the universe – a reality in which mankind plays only a very subordinate and minor role, and in which the laws governing survival reign supreme. Every generation is a genetic bottleneck, holding in its care the genetic and environmental heritage bequeathed to it by past generations. Nothing would seem more tragic to the present writer than the fact that much of the irretrievable harm that this generation is wreaking on both the biological and the non-biological character of the planet on which all life depends for its survival could be avoided if those who *are* altruistically motivated would only concentrate their attention on how their actions will impact on future generations. Those who are genuinely motivated by altruistic impulses need to extend their horizons to take into consideration not just the immediate welfare of our present generation but the greater good of



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that far greater number of individuals hopefully yet to come. Any species that adopts patterns of behavior that run counter to the forces that govern the universe is doomed to suffer a painful, harshly enforced and totally involuntary eugenic process of evolutionary reselection and readaptation – or an even more severe penalty, extinction.

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# Tibet: Endurance of the National Idea

Stephen R. Bowers
and
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CONTENTS

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TIBET ENTERS THE 20TH CENTURY
THE CONSOLIDATION OF CHINESE CONTROL
THE TRANSFORMATION OF TIBET
TIBET IN THE POST-MAOIST ERA
THE TIBETAN CRISIS IN THE POST-COMMUNIST ERA
OPTIONS FOR RESOLUTION OF THE TIBETAN CRISIS
APPENDIX
MAP

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*Book Review Article*

# The Causal Factors of Crime: Understanding the Sub-Culture of Violence

Kevin Lamb

**The AntiSocial Personalities**
by David T. Lykken
Lawrence Erlbaum Associates
1995 259 pp. $40
**Crime**
(Ed.) James Q. Wilson & Joan Petersilia
ICS Press (Institute for Contemporary Studies)
1995 631 pp. $34.95

*The Hive Doth Not Make the Bee*
Seymour W. Itzkoff[1]

Seventy years ago the late Sir Cyril Burt examined the causes of juvenile delinquency. From temperament and heredity to poverty and peer influence, Burt identified the pivotal causal factors that constitute criminal behavior. While stressing the importance of individual differences, Burt reached the following general conclusions;

> Heredity appears to operate, not directly through the transmission of a criminal disposition as such, but rather indirectly, through such constitutional conditions as a dull or defective intelligence, an excitable and unbalanced temperament, or an over-development of some single primitive instinct. Of environmental conditions, those obtaining outside the home are far less important than those obtaining within it; and within it, material conditions, such as poverty, are far less important than moral conditions, such as ill discipline, vice and, most of all, the child's relations with his

[1] Itzkoff, Seymour W. *The Road To Equality* Praeger, 1992., p. 9.



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parents.[2]

Burt's observations are worth noting because, given the accusations of fraud that were levelled by opponents *after* his death, contemporary research findings (exemplified by these two important volumes) continue to corroborate Burt's work, including his assessment of criminality. Given the modest size of his case studies and the analytical methods that he relied upon, Burt's pioneering work holds up reasonable well. As David T. Lykken, professor of psychology at the University of Minnesota, points out in his new study *The AntiSocial Personalities*,

> It is interesting to compare the scientific contributions of those who collaborated in the posthumous destruction of Burt's reputation with any one of his classic studies such as *The Young Delinquent* or *The Backward Child*; the comparison puts one in mind of jackals gnawing on the carcass of a dead lion.[3]

One of Burt's central claims is where Lykken's own theory begins – that "the commonest and the most disastrous conditions [conducive toward delinquency] are those that centre about the family".[4] A leading researcher with the Twins Studies Project under the direction of Thomas Bouchard at the University of Minnesota, Lykken argues that "anti-social" or criminal behavior is primarily the result of inadequate "socialization" from negligent or incompetent parenting.

In order to understand contemporary trends in crime, it is crucial to examine the backgrounds of that segment of society (six percent of the population) which is responsible for most violent crime. A common set of characteristics most often distinguishes the criminal element from the rest of society.

Lykken contends that crime (broadly speaking) is ultimately a composite of interacting factors: age, sex, race, temperament, low IQ,

[2] Burt, Cyril *The Young Delinquent* University of London Press (4th edition), 1948, p. 607.

[3] Lykken, David T. *The AntiSocial Personalities* Lawrence Erlbaum Associates, 1995, p. 74.

[4] Ibid, pp. 199-200.



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bio-chemical imbalances, physique, personality and reckless impulsive behavior. When these criminogenic traits are coupled with dysfunctional family environments (abusive and chaotic households), "anti-social" or delinquent behavior is likely to follow. Violent crime, when viewed in this context, is an extreme form of "anti-social" behavior. Criminality, in other words, is essentially an interrelated series of causal events that begins in the early stages of childhood development. The tracks which the train of delinquency travels are formed by the interworkings of nature and nurture, or what Lykken refers to as *nurture via nature*. A dysfunctional family life serves as the current that moves the locomotive down the rail. As Dobzhansky once put it, "what heredity determines are not fixed characters but developmental processes".

This "anti-social" element within society consists of two broad groups: psychopaths and sociopaths. While Jeffrey Dahlmer and Ted Bundy represent the former most urban violence is typical of the later. Violent crime in civilized societies stems mainly from sociopathic behavior. As Lykken demonstrates, illegitimacy and inept parenting underscore this aberrant behavior.

Lykken strongly believes that inadequate or inappropriate "socialization" is a prime distinguishing characteristic of most criminals, although he cautions that:

> it is no longer intellectually respectable or scientifically acceptable to offer interpretations of important human psychological phenomena that leave genetic influences out of account.[5]

In general, Lykken's theory of "anti-social" behavior complements and expands on the comprehensive theory of criminality offered by Eysenck and Gudjonsson;

> Psychological factors and individual differences related to the personality are of central importance in relation to both the cause of crime and its control... Psychological factors in criminality, we argue, relate to genetic and constitutional causes and to personality

[5] Ibid, p. 86.



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> and other sources of individual differences. This does not mean that some people are *destined* to commit crimes. Criminal behavior as such is not innate. What is inherited are certain peculiarities of the brain and nervous system that interact with certain environmental factors and thereby increase the likelihood that a given person will act in a particular antisocial manner in a given situation.[6]

Various studies support the view that inadequate parenting is a significant link that couples genetic predisposition to environmental factors. Burt (1945), Sheldon and Eleanor Glueck (1950), Gottfredson and Hirschi (1990), Sampson and Laub (1993) repeatedly confirm the important role of family structure and its influence in early childhood development.

Toward the end of his book Lykken enters into the controversial area of race differences in crime. This is an issue that is currently much before the public and numerous academic researchers have noted its significance as a demographic correlate, notably Ellis (1988), Gordon (1987), Herrnstein and Wilson (1985), Laub (1983), Levin (1992), Rosenfeld (1986), and Whitney (1990) among others. Lykken confronts this issue directly, beginning with a discussion of the differential crime rate among Blacks and Whites in the U.S.:

> No matter how one adjusts for other demographic factors, Blacks tend to be overrepresented by a factor of nearly three to one among those arrested for property crimes (J. Wilson & Herrnstein, 1985, pp. 461-462). To put it differently, if the Black crime rate were no higher than the rate for Whites, violent crimes in the United States would decrease by half... Black male juveniles were seven times more likely to murder someone (or to be murdered themselves) in 1980 than were Whites of the same age; by 1990, the ratio had increased to 8:1.[7]

As a grandparent, as he points out, of bi-racial [Black/White]

[6] Eysenck, Hans J. and Gisli H. Gudjonsson *The Causes and Cures of Criminality* Plenum, 1989, p. 247.

[7] Lykken, p. 213.



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grandchildren, the facts about race differences in crime are of special concern to Lykken. His candid assessment of race and crime, which is in no way unsympathetic to Black sensibilities, offers a sharp departure from other researchers who prefer to either ignore the issue altogether or dismiss it as being insignificant. Lykken implies that further improvements in American race relations are jeopardized by refusing to explore the statistical correlation between race and crime in America. He points out that significant differences in the rates of violent crime will most likely affect an individual's judgment upon encountering total strangers,

> Because Blacks and Hispanics are greatly overrepresented among these unsocialized predators, the extraordinary improvements in minority opportunities and interracial harmony that have been achieved since the 1940s in the United States are being threatened. That young man you see approaching along the deserted city street at night – the odds are much higher that he makes his living mugging people if he is Black than if he is White (Levin, 1992).[8]

Public discussions of "Black-on-Black" violence is more common primarily because of the high victimization rates among Blacks. In some quarters this is now viewed as a "public health problem." Just what exactly *causes* such a high level of reckless violence within Black communities? The explanations vary over the years from a legacy of slavery and discrimination, to poverty and location (bad neighborhoods) or to drugs and "gun violence." But are these merely untested assumptions?

Lykken argues that inadequate "socialization" can explain the racial gap in violent crime. The factors that influence Black crime rates, so the argument goes, influence White crime rates as well. Higher rates of illegitimacy among Blacks and weak family structure are generally associated with the higher crime rate.

As Karl Popper once put it, new solutions inevitably raise a new set of problems. Lykken's explanation for the persistence of race differences in crime raises additional questions: Why are rates of

[8] Lykken, p. 6.



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illegitimacy higher among Blacks? What are the factors that shape family environments? Why are some acts of criminal recklessness, like car-jackings and drive-by shootings, so heavily racially imbalanced? Do traits that are uniquely characteristic of some ethnic groups predispose some to deviant behavior? What is it about Black culture that continues to produce higher rates of "anti-social" or criminal behavior?

One explanation that Lykken offers is that the fifteen point average IQ difference between Blacks and Whites plays some role. Johns Hopkins sociologist Robert Gordon argues that IQ heavily predicts delinquency as well as socio-economic status.[9] Herrnstein and Murray also found that lower IQ levels are a distinguishing characteristic among the violently criminal segment of the population.[10] David C. Rowe, professor of psychology at the University of Arizona, presents an alternative theory to the "socialization" hypothesis. Rowe argues that genetic factors account for within family sibling differences and that these factors may actually influence what is mistakenly attributed to the child rearing environment.

In addition to "socialization," the theory of genetic differences offered by Michael Levin, professor of philosophy at CCNY and J. Philippe Rushton, professor of psychology at the University of Western Ontario is equally thought-provoking. Levin argues that the sociopathologies endemic among violent criminals are the result of what he calls "time preferences." The idea of a "time preference" is essentially the inability to defer instant gratification for a more beneficial good at a greater personal sacrifice. An extreme example of this is someone who feeds a crack-cocaine or alcohol addiction rather than being able to apply their personal income wisely. Essentially, Levin's description applies to a spendthrift who lacks any forward planning for the future. In the words of Francis Bacon, "A

[9] Gordon, Robert A. "SES versus IQ in the Race-IQ-Delinquency Model", *International Journal of Sociology and Social Policy*, 1987; Vol. 7, No. 3: 30-96.

[10] Herrnstein, Richard J. and Charles Murray *The Bell Curve* The Free Press, 1994, pp. 235-253.



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wise man will make more opportunities than he finds."[11]

Rushton has recently argued that the differences in crime rates among Blacks and Whites transcend national boundaries. On an international scale Asians are less violent than Whites who are in turn less violent than Blacks. Rushton's Differential K theory seeks to explain this by linking a lower incidence of violent crime (as distinct from "white collar" crime) to evolutionary differences, contending that,

> the further north humans migrated out of Africa about 100,000 years ago, the more they encountered the cognitively demanding problems of gathering and storing food, gaining shelter, making clothes, and raising children successfully during prolonged winters. As the original African populations evolved into caucasoids and mongoloids, they did so in the direction of larger brains and lower levels of sex hormones, with concomitant reductions in aggression and sexual potency and increases in forward planning and family stability (Rushton, 1995).[12]

**"Parental Licensing"**

Lykken's conclusion that higher rates of illegitimacy and inept parenting account for much of the racial differences in U. S. crime is well argued and will raise few eyebrows. The most controversial feature of his study is embodied in his policy prescriptions of what society can do to reduce the long term effects of violent crime. Lykken advocates the funding of a social program that "involves the child's parents and school teachers as well as the child and his peers..." Where this fails, well-funded foster homes would provide an alternative rearing environment.[13] Indeed, he proposes three possible solutions to sociopathic behavior: parental guidance, alternative rearing environments, and *parental licensure*. The latter is hardly likely to win popular support, but it serves to make the reader stop

[11] Levin, Michael *Why Race Matters: Race Differences and What They Mean* (forthcoming book), Chapter 8.

[12] Rushton, J. Philippe "Race and Crime: International Data for 1989-1990", *Psychological Reports*, 1995; Vol. 76: 307-312.

[13] Lykken, pp. 230-232.



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and think more intensively about the situation Lykken is describing.

Lykken's suggestion that a system of parental licensing is needed to prevent the kind of bad upbringing that contributes to criminality will naturally stir a strong reaction at both ends of the political spectrum. Conservatives will view it as being excessively intrusive while liberals will consider the idea to be discriminatory. It certainly smacks of "1984." However, as a "thinking exercise," it has its points. Lykken does not hesitate to press these home, closing his insightful work with the statement that,

> A society that enforces parental licensure, but one in which mature married couples who are self-supporting, noncriminal, and not mentally ill can expect to receive a license if they want one, does not seem to me to deserve the epithet "totalitarian". Such a society, however, would surely be a safer, happier one for children to grow up in and one in which the incidence of 11-year-old murderers would be negligible.[14]

**Wilson and Petersilia on Crime**

The Wilson and Petersilia text – "dedicated to the memory of Richard J. Herrnstein, scholar, colleague, friend" – consists of twenty-one chapters by twenty-eight leading experts that cover prisons and the police to gangs, the media and gun control. The more notable chapters are those by Herrnstein on "Criminogenic Traits", "Biomedical Factors in Crime" by Patricia A. Brennan, Sarnoff A. Mednick, and Jan Volavka, and the final chapter "Crime and Public Policy" by James Q. Wilson.

Some of the general findings include:

- Juvenile crime rates between 1985 and 1992 doubled for White males and tripled for Black males.
- Homicide is the leading cause of death for juvenile Black males.
- Guns are used just as often in acts of self-defense as in the commission of a crime.

[14] Ibid.



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- Injuries occur six-times more frequently than fatalities in gun-related incidents.
- Increasing police presence in gun-related crime areas may effectively prevent violent crime.
- Crime rates remain largely unaffected by dramatic increases in the prison population since the mid-1970s.
- Relatively Speaking, violent crime is more common in the United States than in other western industrialized nations.

In his chapter on "Criminogenic Traits", Richard Herrnstein shows that early delinquent behavior is a reliable predictor for criminality. He also points out that, "after sex and age, the single most firmly established psychological fact about the population of offenders is that the distribution of their IQ scores differs from that of the population at large". As had been previously noted by Hooton (1939), Sheldon (1949) and the Gluecks (1974), Herrnstein confirms the relationship between criminal behavior and mesomorphic physique.[15]

Brennan, Mednick and Volavka update the latest empirical research on biological factors of criminality. The genetic factors that influence crime are supported from three distinct methods of empirical research: family, twin and adoption studies. In brief, Brennan, Mednick and Volavka find the following "Biomedical Factors and Crime":

*Genetics*
Criminal behavior in parents increases the likelihood of nonviolent crime in the offspring. This relationship is due, in part, to genetic transmission of criminogenic characteristics. This genetic effect is stronger for females and is especially important for recidivistic crime.
*Perinatal Factors*
Delivery complications are associated with juvenile and adult violent crime. The effect of delivery complications on crime is stronger in

[15] Herrnstein, Richard J. "Criminogenic Traits" Wilson & Petersilia *Crime* ICS Press, 1995, pp. 49-56.



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more unstable families.

*Neuropsychological and Neurological Factors*

Frontal lobe dysfunction has been found to be associated with adult violent crime. Left hemisphere fronto-temporal dysfunction is related to a wide variety of antisocial outcomes.

*Neurochemical Factors*

Reduced cerebrospinal fluid 5-hydroxyindoleacetic acid (a metabolite of serotonin) levels have been found in individuals exhibiting impulsive aggression, especially those with a history of alcohol abuse.

*Psychophysiology*

Antisocial individuals evidence reliably reduced levels of autonomic reactiveness and poor conditioning of autonomic responses. Prospective studies reveal a relationship between EEG slow alpha activity in childhood and arrests for property crimes in adulthood.

*Biosocial Interactions*

Biological factors have been found to be especially likely to predict criminal outcome when combined with adverse social environments.[16]

Wilson's closing chapter is by far the most insightful and perceptive. One of the ironies in this century is that overall increases in prosperity and freedom have been accompanied by higher rates of violent crime. He attributes this in part to an erosion in moral standards and further argues that violent crime will continue to present problems in all open and free societies.

These contributions add to a greater understanding of crime and what, if anything, can be done to curb the present levels of violent crime. The Lykken study and the Wilson/Petersilia text together highlight some of the most important empirical evidence to date on the causes and consequences of violent crime.

[16] Brennan, Patricia A., Sarnoff Mednick and Jan Volaka "Biomedical Factors in Crime" from Wilson & Petersilia, pp.87-88.



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